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Edited by JAMES EARL RUSSELL

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THE PLACE OF DUTY AND DISCIPLINE IN A DEMOCRATIC SCHEME OF EDUCATION*

By WILLIAM C. BAGLEY
Professor of Education, Teachers College

For the first time in our history, our people are awakening to the fact that an educational system in a democracy has a fundamental duty to discharge in insuring a thoroughgoing community of ideals, aspirations, and standards of conduct. They have become aware that it does make a difference to the nation whether its citizens can think together and act together, and that ignorance and mental sloth are much more than individual handicaps and misfortunes—that they are in a very real sense millstones around the corporate and collective neck of the body politic.

It is safe to say that the actual sanctions which have operated to promote universal education in this country have been essentially individualistic. While the notion of education as a bulwark of the social structure has been utilized as an argument for the support of schools and for the establishment of the principle of compulsory attendance, the underlying motives have been philanthropic. The injustice to the individual who is deprived of educational advantages has actually loomed much larger than the risk that society incurs in permitting this condition to go uncorrected. It is in no sense derogatory to our people to say that they have been impelled by these motives of philanthropy to establish public and tax-supported systems of education; on the contrary, such motives are very much to their credit. But if the motives are praiseworthy as far as they go, they are also partial

*A paper based upon an address at the Staff Meeting of Teachers College, April 25, 1918.

and insufficient; they lack the pervasive strength and virility that are essential to a thoroughly effective educational system. Their appeal is essentially emotional and sentimental.

It is a simple matter to point out defects in our present educational system that are due primarily to this partial point of view. First and foremost is the extreme localism of educational administration. In general, we have passed but one stage beyond the family in our conception of educational responsibility. If a town or a city provides good schools for its own children, it is commonly quite complacently satisfied. Other communities may be less fortunate, but that is their affair. We abstractly recognize that the responsibility cannot be thus restricted; we abstractly recognize that ignorant and undisciplined groups wherever they may be located are a menace to the welfare of society as a whole; but this abstract principle has heretofore found only an inadequate expression in state and national legislation. It has taken this great crisis to force home the danger that lurks in the large aggregate of adult illiteracy that the draft has revealed, and to show clearly that education, after all, involves something more than a right and a privilege that organized society owes to its individual members.

A second expression of this essentially philanthropic conception of education is to be found in the estimate which society places upon the teachers of the lower schools. A country that nonchalantly permits a vast majority of its future citizens to be taught by immature and untrained teachers, a country that tacitly accepts the point of view that teaching in the lower schools is a casual and temporary occupation, is not yet thoroughly alive to what education must mean to an effective and enduring democracy. Certainly when we remember that throughout the land the schools of the villages and rural districts, in which more than one half of the nation's children are enrolled, are taught by the youngest, the most transient, and the least well prepared of our teachers, we are compelled to admit that the narrow neighborhood conception of educational responsibility has not as yet been appreciably modified.

But perhaps the most striking expression of the individualistic tendency in education is the failure of our schools to foster and utilize, as a motive for the effort that mental mastery involves,

the notion of one's duty and obligation to one's country and to the ideals for which the country stands. There has, indeed, been a tendency in both educational theory and school practice to belittle duty and obligation as motives to effort. This tendency has not been without a large measure of justification, for at basis it is a reaction against the formal and mechanical methods of teaching and learning which point inevitably toward educational stagnation. Because the weakness of poor teaching and the inadequacy of existing curricula could at times be cloaked by an emphasis upon the duty of the pupil or the student to take in a docile fashion the kind of education that was served up to him, those who have been sincerely anxious to improve the quality and the content of instruction have quite naturally derided an appeal to the learner's sense of duty as a confession of educational failure. There is a tendency, indeed, to go even further than this, and to insist that the learner should not be expected or encouraged—much less required—to put forth effort unless he can see clearly whither the effort leads and why the goal is desirable.

This extreme view would have a tendency, obviously, to encourage a most unfortunate type of individualism. The conscientious teacher would be ever on guard lest the factor of compulsion should operate to thwart the pupil's will, and would in consequence be under a continual temptation to exploit immediate interests. The learner, conscious of his teacher's self-imposed limitations, would find an easy escape from tasks unpleasant or burdensome. Under the dominance of this extreme reaction against duty and effort, indeed, good schools have degenerated, and their pupils have suffered a real injustice. Happily, however, the common sense of most teachers rebels against the ultimate implications of such a doctrine. The theory is accepted, so to speak, "subject to adjustments in practice."

This compromise between principle and practice is far from a satisfactory solution of the problem, and as a matter of fact it is unnecessary. We admit willingly enough not only the necessity of the military draft, but its fundamental justice and its consistency with the ideals of democracy. We are conscripting millions of our young men to fight the battles of democracy. We do not ask whether they would rather do something else;

we assume that, whatever their individual desires and wishes may be, they will place first of all the defense and perpetuation of the ideals for which the country stands. It would, indeed, be an insult to these young men to make any other assumption.

From every point of view, the principle of military conscription as embodied in our selective-service policy is recognized as vastly superior to the 'volunteer' principle. It has placed the emphasis where it belongs—namely, upon duty and obligation rather than solely upon privilege. The element of compulsion that it involves is clearly seen not to exert the unfortunate influences that its opponents prophesied. Far from promoting a blind or tacit acceptance of the righteousness of the war, it has stimulated a real understanding of the great issues at stake. Far from encouraging a merely emotional loyalty, it has played an important part in developing an intelligent devotion that rests upon reasoned conviction.

There is in all this an unescapable lesson for education. It is undeniable that education just before the war was giving a larger and larger emphasis to a principle quite analogous to that of the volunteer system in national defense. The ideals of duty and obligation were belittled as motives to effort on the ground that they were inconsistent with a rational understanding of the necessity and purpose of effort. Compulsion and discipline were looked upon as essentially anti-democratic. The experience of the war, if it has taught anything, has certainly taught that these ideals and agencies can be made to render an indispensable service in a thoroughly democratic order.

There is more than a superficial analogy between the service of national defense and the service of public education in a democracy. If a man fails to do his duty on the field of battle, he is branded as a coward and a traitor. But there are factors in addition to physical courage that are essential to democracy's welfare. In a true democracy, where each citizen must bear his equal share of the responsibilities of government, the duty of intelligence stands on an equal footing with the duty of courage. We see how necessary it is that the latter duty be taken for granted. But the former duty is just as significant and just as fundamental to the security and progress of the democratic ideal.

But the war has brought forth a new reason for emphasizing the ideals of duty and obligation in our American system of education. We have been transformed within a year from a relatively isolated and self-sufficient people to a nation even now clearly destined to bear the most serious and far-reaching international responsibilities. Our people constitute the richest and strongest of the great democracies; because of their wealth and their strength, if for no other reason, their collective will is bound to be an important factor in determining the new world order. We can no longer live to ourselves alone; we can no longer attempt to justify what is weak and ineffective in our own democracy on the ground that our affairs are of no concern to the rest of the world. To discharge the responsibility which must inevitably rest upon us, we shall need the highest level of trained and informed intelligence which our educational system can produce. The immediate future will call for broad knowledge and keen judgment and right ideals just as insistently as the present crisis calls for courage and sacrifice. It is not sufficient to say that this is an obligation that we have not sought; it is clearly an obligation that we can neither evade nor avoid. And it means in the last analysis only a fair and equitable return for benefits that we are bound to require. If the collective will of our people must inevitably be a potent force in the new world order, then certainly we owe it to the free nations of Europe who have borne for us the earlier burdens of the great struggle to see to it that this collective will is guided and directed by a collective intelligence of the highest possible order.

Nor is it sufficient to say that we can depend alone upon trained leaders to discharge this responsibility. Leadership is, of course, essential, but the notion that ten per cent of the citizens may do the thinking for a democracy while ninety per cent do the routine work is fraught with the gravest dangers. Russia had her secondary schools and her universities, but the trained intelligence of Russia's leaders has so far been helpless both to save Russia and to do her share in saving democracy. What England has clearly seen and embodied in the recently enacted education law is that universal education much longer in duration and much broader in scope than even the most progressive nations have yet attempted will be imperative in the new

democracy. The peril from autocracy will not end with the defeat of German militarism. It lies too deep in human nature. It has its roots in the powerful instinctive impulse of the individual to dominate his fellows. The only permanent safeguard against this peril is a level of trained intelligence so high and so nearly universal that the ambitions of individuals or classes to dominate the group will be detected and thwarted at every point.

And this, in truth, means that each generation in its turn must pay the price of sacrifice and effort that such a level of intelligence involves. Not passively may a single generation accept the gift of freedom, for true freedom has ever been not a gift but a conquest. If those who are to come after are not to pay for their liberties in the same precious coin that the free peoples are now pouring out so lavishly, they must pay in coinage from another mint—but the price itself cannot be escaped. The individual may perhaps 'let down' or 'ease up' as the years advance and the fruits of his toil accumulate, but when a race or a social institution like democracy begins to let down and take things easily, its day has passed. And the first place at which this collective decadence is likely to set in, certainly the place from which it can spread most rapidly and most disastrously, is in the educational ideals and practices of a people. The gravest danger of democracy is that its educational theory may become soft and spineless.

It should not be a difficult matter at the present time to inject into our educational system as a permanent national asset something of the vigor and virility and idealism that finds so wholesome and tonic an expression in our training camps, in our war industries, and in every other phase of our national life that has been touched and quickened by the fine altruism of the cause for which we are fighting. There are obstacles, it is true, but they are not insurmountable. To impress upon even young children the notion of education as a democratic duty is not beyond the ability of the skillful teacher. Nor should it be a difficult task to turn the powerful force of public opinion toward the strengthening of this motive. People are thinking to-day as never before in terms of the common good. They are insisting that the common good shall be the fundamental standard in the

administration of business, transportation, and industry as well as in the conduct of public affairs. The day of individualism has gone by, and the notion of education as a means of securing an individual advantage in the social order should be and can be replaced by the conception of education as a democratic duty.

This does not mean that the efforts to make school work meaningful are to be abandoned, or that education is to be contented with the materials that comprise existing courses of study. On the contrary, improvements in both the content and the method of instruction should be stimulated by the vastly greater significance that will attach to education once its relation to the welfare and responsibilities of the nation is clearly recognized. One need have no fear that the emphasis upon education as an obligation of the individual to democracy will encourage the barren formalism which all thoughtful students of education have lamented and striven to remedy. But the new point of view will have the advantage of ridding educational reform of the handicap under which it has been forced to work in the past—it will do away with the necessity of playing into the hands of individualism by making individual interest and desire its only practicable standard for proposing changes in the existing order. With virile ideals of obligation and duty as a dependable background, reform movements may proceed in every needed direction without involving the unfortunate tendencies which, in the absence of this essential balance wheel, they have heretofore so often reflected. Just prior to the war, for example, an outstanding reform movement in education was distinctly toward early differentiation. To-day it is clear that the primary function of education in a democracy is to integrate rather than to differentiate the people. Before the war, too, there was a marked tendency in educational theory toward an overemphasis of 'local needs' as determining factors in educational organization; to-day the needs of the nation are seen to be of paramount importance. Both of these movements, now recognized as leading in quite the wrong direction, were in part conditioned by the absence of a fundamental motive that could be called upon to energize and vitalize the learner's effort. The general tendency, then, was to fall back upon the immediate and the local and to discount what is permanent and universal.

Nor will the recognition of education as a democratic duty bring back the blind and unintelligent ideals of discipline that prevailed in the past and from the domination of which the schools have now very generally emerged. On the other hand, a new basis for an effective type of discipline will be provided—and this our *ante-bellum* efforts at reform gave no promise of producing. Discipline means systematic and persistent effort that proceeds irrespective of immediate desire. The prime function of an ideal of duty is to hold one to this essential regimen when all other motives fail—when the immediate activity itself no longer attracts, and when even the end of the activity loses for a time its compelling force. The need of such an ideal as a background for a protracted series of efforts is obvious enough; in fact, all of the great regulative ideals that have been evolved in the long course of human experience—honesty, courtesy, courage, cleanliness, industry, personal honor, and the like—fulfill either this or an analogous function. In a sense they are 'blanket controls' of conduct, serving to hold in leash individual impulses and desires which, in the absence of such controlling agencies, would frequently imperil both the individual and the social welfare.

Some typical expressions of these regulative ideals may serve to make clear their essential characteristics. The farmer's deeply seated prejudice against idleness is a case in point. It is not enough that he recognize the actual necessity of his work to his livelihood. When effort is essentially unattractive, even an intellectual recognition of its necessity may not have the motive force necessary to hold one to it. The farmer fortifies his intellect with his emotions. He idealizes work. The ideal becomes to him an 'absolute', without at the same time losing one whit of its pragmatic justification. It is, in effect, a 'blanket control', leading him aggressively to *seek* things to do during the hours regularly set apart for labor, even if nothing seems to be imperative at the time being. It constitutes, so to speak, a wide circle of available motive, within which other motives may operate from time to time. It does not exclude interest in the activity as such. It does not exclude a keen appreciation of purpose. But it does serve as a dependable source of effective motive when these other less comprehensive forces fail to work. It exerts the steadying and compensating influence of a balance-wheel.

Another illustration is furnished by the ideals of honesty and integrity in business. It is not enough that the merchant recognize the possible effect of dishonest practices upon his business. In some cases, indeed, he might reason that an increase in the account of a wealthy but careless customer would pass undetected, or, if detected, could be readily explained. He might reason that this wealthy but careless customer would never miss the money, and indeed that he (the merchant) could make a much better use socially of this involuntary contribution than could the customer. Here it is clear that an absolute standard of honesty and integrity is fundamentally essential, and it is equally clear that this standard must operate with a strong emotional force—a force sufficiently strong to override immediate desire and to check plausible but specious reasoning. Again we have a 'blanket control', an 'absolute' in so far as the individual is concerned—something that must be made so vital a part of his life that it is not questioned. But, although it is individually an 'absolute', it has socially, like all of these basic regulative ideals, the strongest of pragmatic sanctions.

It is something akin to this that is needed as a determinant of the individual's attitude toward education and toward the effort that learning and mental growth inevitably involve. Industry and honesty are virtues so significant to the social welfare that they have long since been idealized in the sense referred to. In the new social order, where more and more directly the will of the people as a whole is to control human destiny, trained and informed intelligence upon the widest possible scale is a social necessity of the first magnitude. Should not education *as a duty* have the same emphasis that industry and honesty have as duties?

And just as these other regulative ideals cannot be left entirely dependent upon the perception by the individual of the advantage that will accrue to him through being industrious and honest, so the highest possible level of trained and informed intelligence should not be entirely dependent upon the individual's conviction that this, too, will serve him in good stead. Its advantage, like that of industry and honesty, is primarily a social advantage. All of the regulative ideals are at basis mandates of the social will. The duty of intelligence should become in like measure a mandate of the social will.

Educationally, the regulative ideals are both the products of what is termed discipline, and in themselves the agencies of continued self-discipline. The place of compulsion in education is determined by the degree in which compulsion so engenders these controls that they will thereafter operate as means of self-discipline. It is clear that brutal and unintelligent compulsion may have an effect quite the opposite of that desired. But it is equally clear that compulsion exerted intelligently by the parent, by the teacher, or by the social group itself through its authorized agencies or through the informal but powerful force of public opinion with its sanctions and its scorns, must hold in education a place of prime importance. The problem, then, is to be solved neither by decrying compulsion, nor by recognizing it with averted face as a necessary evil, but rather by determining the points at which its influence is necessary and salutary and the points at which its influence is either negative or positively weakening.

An essential function of compulsion is to exemplify the type of conduct that is wholesome and desirable—to provide, so to speak, an object-lesson, particularly at times when choice by the individual would be perilous or uncertain, or when adequate bases for individual choice do not exist, or when the nature of the situation is such that there is in reality no scope for the individual's choice. It is conceivable that the individual in passing from infancy to maturity might learn the *licets* and *non-licets* of civilized life through the discipline of natural consequences without responsible guidance at the hands of other persons. But even this process of natural education would involve external compulsion—and a form of compulsion the more cumbrous, uncertain, and inequitable in its operation because it is accidental, unintelligent, impersonal, and unsympathetic. The problem of fitting an individual for a democratic social order is clearly not to be solved in this way. Direct, explicit, and responsible control is essential during childhood and early youth; but again it must not be an inflexible and unintelligent control. Capacity for self-discipline must be the end that is constantly in view, and the notion of individual responsibility must be gradually but certainly developed. From obedience to parents and teachers—that obedience to persons for which there is doubtless

an instinctive basis—there must gradually emerge an obedience to law as representing the collective will of the social group and ultimately that obedience to ideals which constitutes true self-control. But these higher types of obedience must come through the lower, for here as elsewhere in education, the abstract must rest upon the concrete.

Nor is such a conception of obedience inconsistent with true democracy. If it were, democracy would, indeed, have a precarious footing. The great concern of democracy in this connection must be that the external control over the conduct of childhood and youth does not *end* in the primitive form of obedience to persons but actually evolves into the higher form of obedience to law and to ideals. To arrest development upon the lower plane is to weaken the will of the individual and to leave him an easy object of exploitation at the hands of selfish and undemocratic interests. But to attempt to 'short-circuit' the development is likely to prove equally disastrous.

What has been said of the place of compulsion in developing the regulative ideals will apply in large measure to what is known as direct moral instruction. The recent tendencies in American education somewhat dogmatically to deny the efficiency of such instruction are an extreme reaction against the purely formal effort to insure the dominance of right standards by preaching the importance of these standards. The shifting of the emphasis from words to deeds has been a most salutary reform. And yet it would be both futile and foolish to deny the tremendous influence of direct instruction and inspiration. It is true that morality at basis consists in *doing*, but it is also true that moral doing is conditioned by ideas and ideals, and that these may be powerfully influenced by principles and precepts that have been formulated in words. The problem again is to determine when and where and why direct moral instruction is effective and when and where and why it fails. The elaborately organized system of direct moral instruction that has been a feature of public education in France for more than a generation once impressed many of us in America as the last word in hopeless formalism. It is, of course, unsafe to conclude at the present time that this system has been an important factor in determining the superb morale of the French people during the past four years, but a

strong presumption in favor of such a conclusion is certainly justified, especially in connection with the emphasis that the French system has laid upon duty and obligation to the nation. The danger of direct moral instruction lies in its tendency to become detached from actual conduct; the danger of a policy of indirection lies in its uncertainty, its indefiniteness, and its general ineffectiveness; the solution is to effect not a compromise between, but rather a synthesis of, the two methods. The reiteration of fundamental principles—of ideals clothed in an effective garb of language—may well serve to reinforce emotionally and to generalize intellectually the types and motives of conduct that actual doing should be depended upon to exemplify. The outcomes of specific moral training—the habits of conduct built up in response to specific situations—are subject beyond doubt to the same limitations with regard to transfer as are other specific habits. They are likely to cling to the situations in which they are formed (or at most to spread only to closely similar situations) *unless the virtues that they represent have been raised to the level of principles and ideals.* That direct instruction may greatly facilitate this generalizing process is a conclusion quite consistent with all that we now know concerning the transfer of training.

Both intelligent discipline and direct instruction and inspiration, then, have a place in the development of the regulative ideals. Both have a place in insuring the recognition of education as an obligation of the individual to a democratic society. Once established on a universal basis, this ideal will fitly complement the efforts of the free peoples to make the world safe for democracy. Only through the sword to-day can the first condition of this safety be fulfilled. Only through the schools of democracy can this great gain be made permanent.

THE SECRET OF THRIFT

A New Aladdin's Lamp for Every Boy and Girl

By CLIFFORD BREWSTER UPTON
Associate Professor of Mathematics and Secretary of Teachers College

Introduction for Teachers

The aim of this article is to present in a new light certain facts about systematic saving and investment, an important element of thrift. The article is addressed to boys and girls merely to suggest one possible way of making a somewhat difficult topic interesting to school children. It is expected that teachers will make many improvements upon this presentation in adapting it to the needs of their individual classes. The form in which thrift is here presented requires a knowledge of simple interest; consequently this presentation is limited, in general, to pupils in the seventh and eighth grades and in the high school. In some schools it can be given in the sixth grade.

Grammar grade children, together with those in the high school, need as an incentive to saving some basic facts beyond mere exhortation of the sentimental or patriotic type. An appeal to patriotism as a reason for saving, to be effective, must always be supplemented by facts about the economics of thrift. It is the economic basis that this article seeks to give.

Before taking up this treatment, the teacher should read to the pupils from the *Arabian Nights* the story of "Aladdin and the Wonderful Lamp," unless all the children are already familiar with it.

It is not expected that the topics of this paper can be presented to pupils in two or three lessons. The material represents a number of lessons to be incorporated into the work of the arithmetic class for grammar grade pupils and into the course in algebra for high school pupils. The teacher should also devise enough supplementary problems to enable the pupils readily to understand each of the ideas that are to be brought out.

In the high school a considerable number of lessons can profitably be devoted to the algebraic treatment of the mathematics of thrift along the lines presented on pages 446 to 455 of this paper. If the teacher finds opportunity to supplement the work here given by a number of the other topics suggested in the article an entirely new type of algebra curriculum may be constructed, the content of which will be vitally important to both girls and boys.

To the Pupils of the 7th and 8th Grades
and the High School:

Can you tell me what to do with a quarter of a dollar to make it turn into a whole dollar *without my having to do any work whatever?* Of course I know that I could invest this quarter in newspapers and make a profit by selling the papers. After selling papers every day for a week I might have a dollar by the end of that time; but this would require work on my part. What I want to know is this: How can I make a quarter grow into a dollar without my doing any work whatever? I hear one of you say that only a magician could do that. Well, it does sound like magic, doesn't it? Perhaps it seems to you to be a kind of magic as wonderful as Aladdin's lamp. You remember in the story of Aladdin that when Aladdin wanted gold, or precious jewels, or a beautiful palace, all he had to do was to rub a lamp and his wish was immediately granted.

I am going to tell you about a lamp of another kind, a new Aladdin's lamp, which when rubbed will make $1 turn into $5, or into $6, or into as much as $10, or even more. This new lamp I shall call the Magic Thrift Lamp. If you rub or touch the Magic Thrift Lamp with a dollar, the dollar will begin to grow and will keep on growing just as long as the Magic Thrift Lamp touches it. As soon as you take the dollar away from the lamp, the dollar will stop growing. And like Aladdin's lamp, this Magic Thrift Lamp has the power to do these wonderful things for every boy or girl who possesses it. Just think of this great magic that can turn a dollar into $5, or $6, or even $10! It is curious too that this Magic Thrift Lamp will do more for the young boys and girls than for the older ones. For the youngest boys and girls it will turn the dollar into $10. For those a little

older it will turn the dollar into $7 or $8. For the grown-ups or for your fathers and mothers it may only turn the dollar into $2 or $3 or $4. So you see to get the most out of this Magic Thrift Lamp you must learn about it when you are young and must always keep it in use.

How the Magic Thrift Lamp Helps Us to Save Money

It is evident that what I have told you can be a great help to you in saving money. If you save a dollar and put it where this Magic Thrift Lamp can touch it, you will find that after a certain time you will have $2. If you leave the dollar in touch with the lamp long enough it will turn into $3. If you leave it still longer, it will turn into $5, or $6, or $10, or even more. And all this can result from the saving of a single dollar. Further, every dollar that is saved can be made to grow in the same way.

But there is one peculiarity about this Magic Thrift Lamp; it demands that it shall not be disturbed when it is working. If you interrupt the lamp when it is working by touching the money or taking it away, it will stop working immediately. And if it stops working it will of course spoil the chances of your dollar turning into a large amount like $6, or $7, or $10. So you see that we are forced to leave our money alone if the lamp is going to make it grow. But if we obey its rules, the Magic Thrift Lamp always repays us by giving us in the end much more money than we started with.

Why We Should Save Money

As I have just said, this Magic Thrift Lamp can be a great help to you in saving money. And it is very important, as you know, for all of you to save money. Of course, none of you saves money just for the sake of the money itself, for if you did you would not be any different from the miser who hoards his money in a chest and does no good with it whatever. Your only reason for saving is to have sufficient money on hand for the time when you will need it very badly. When that day comes it is likely that you will need the money much more than you need it to-day. This need may come when you grow up and want money to go to college, or to start in business; or it may arise if

you should be taken very ill. You may want money when your parents get old and need your help. And when you yourselves grow old and cannot work any longer, you will need enough money to live upon the rest of your lives. And you should remember too the pleasure that comes from being able to help others. How often have you regretted that you could give so little to some good cause.

Some people do not save money regularly and when they become old they find themselves dependent upon relatives for support. Unfortunately, there are a great many such people. It is said that only 3 persons out of every 100 have saved enough money by the time they get to be 65 years old to support themsleves independently for the rest of their lives. What a pity this is—to think that 97 old people out of every 100 would be in great want unless some son or daughter or other relative or the public supported them. The reason I want to tell you about this Magic Thrift Lamp is to enable you to take pride in planning right now so that when you grow old you will have saved enough to take care of yourselves for the rest of your lives. I shall not speak of this matter further now. I merely want to remind you again that *the chief reason for saving is to have enough money on hand to use at any time when you get older and when some great need for money may suddenly arise.*

How the Magic Thrift Lamp Makes Money Grow

Now let me return to the Magic Thrift Lamp and tell you more about it. Of course, you want to know how the lamp works and how it makes $1 turn into $2 or $3, when you put a dollar where the lamp will touch it. Well, one thing that makes the Magic Thrift Lamp work is *interest.* You all know what interest is. It's what you get if you put your money in the savings bank. Just as a boy can earn wages by working in a store, so money can earn wages by working for you if you lend it to a savings bank, and we call these wages *interest.* There is a Magic Thrift Lamp in every savings bank which makes every dollar grow that comes in touch with the lamp. Ordinarily, when you put money in the savings bank you get about 4 per cent interest a year. That means that if you leave $100 in the bank it will earn $4 a year. In fact, your $100 earns a little over $4 for the first year because most

banks pay you the interest every 6 months. Let us see whether you can find out just how fast money will grow in a savings bank. I will ask you to take pencil and paper and figure out answers to the following questions:*

1. If you put $100 in the savings bank at 4 per cent on January 1, 1919, how much interest will your $100 earn by July 1, 1919?

2. Would it be better to leave this $2 interest in the bank or to take it out and spend it?

3. If you leave the interest in the bank how much money will you have there on July 1, 1919?

4. For the next 6 months (July 1, 1919, to January 1, 1920) how much interest will $102 earn?

5. What is the best thing to do with this $2.04 interest?

6. If you leave the interest in the bank how much will you have altogether in the bank on January 1, 1920?

7. In the next 6 months (January 1, 1920, to July 1, 1920) how much interest will your $104.04 earn?

8. What will you do with this $2.08?

9. How much then will you have in the bank on July 1, 1920?

If you continue the calculations in this way for each 6 months, always leaving the interest in the bank, you can make a table like the one below which will show just how your money will grow. Let us call this

MAGIC TABLE No. 1

On January	1,	1919,	you start with	$100.00
On July	1,	1919,	it will grow to	$102.00
On January	1,	1920,	it will grow to	$104.04
On July	1,	1920,	it will grow to	$106.12
On January	1,	1921,	it will grow to	$108.24
On July	1,	1921,	it will grow to	$110.41
On January	1,	1922,	it will grow to	$112.62
On July	1,	1922,	it will grow to	$114.87
On January	1,	1923,	it will grow to	$117.17
On July	1,	1923,	it will grow to	$119.51
On January	1,	1924,	it will grow to	$121.90

* The answers to the above questions are here given for reference:
1. $2. 2. Better to leave it in bank. 3. $102. 4. $2.04.
5. Leave it in bank. 6. $104.04. 7. $2.08.
8. Leave it in bank to be added to $104.04 already there. 9. $106.12.

You should all make these calculations just as I have done and see that your figures agree with those in the table. If your figures do agree you will have the satisfaction of knowing that you have your arithmetic well in hand. Your teacher will help you if you get into difficulty. Of course, you will find the calculating getting more tedious as you progress; but do not get discouraged, for the secrets of the Magic Thrift Lamp, like most secrets worth having, are hard to get. By examining carefully this Magic Table No. 1 we see that from January 1, 1919, to January 1, 1924, is just 5 years, and in this time $100 has grown to be $121.90, because you left the interest due each 6 months in the bank instead of taking it out. If you had taken the interest out of the bank each 6 months and had spent it, at the end of 5 years you would still have the $100 you originally put in the bank. It would not have grown at all. You should notice, too, that by leaving each 6 months' interest in the bank, the interest in turn drew further interest, that is, you were getting interest upon interest. In our arithmetic classes we learn to call this *compound interest.* Compound interest is part of the secret of the Magic Thrift Lamp. But you do not know all of the secrets of the lamp yet, because you do not know an easy way of figuring compound interest. One secret of thrift is to know definitely just what return you can expect if you invest your money in a certain way; that is, to know with absolute certainty just what goal you will reach. I have such a secret and that secret shall be yours.

Where the Magic Thrift Lamp Works

Now there is one thing that I must make very clear. The Magic Thrift Lamp will never work upon your money and make it grow if you keep your money stored up at home as a child might keep it in his toy bank. The Magic Thrift Lamp can't work in such a small place as a toy bank; it only works when you lend your money in some such way as to a savings bank or to the Government.

War Savings and Thrift Stamps

The United States Treasury is the safest place you can put your money. One of the best ways in which girls and boys can lend their money to the Government is by buying War Savings

Stamps. Perhaps you bought a War Savings Stamp in January, 1918, at $4.12. You know that in 5 years the Government will pay you back $5 for this War Savings Stamp. This means that the $4.12 will turn into $5 in 5 years. But what will make it do this? Yes, of course you know. It is the Magic Thrift Lamp which will make the $4.12 turn into $5 and that means that compound interest will be at work. But your $4.12 never will become $5 if you disturb it during these 5 years. It is only by leaving the $4.12 constantly in touch with the Government's Magic Thrift Lamp for the full 5 years that it grows to be $5.

If you want an interesting opportunity to see how good you are at arithmetic, figure out how $4.12 will amount to $5 in 5 years. Use 4 per cent and calculate the interest annually instead of every 6 months. I shall start the table and ask you to finish it. Let us call this

MAGIC TABLE No. 2*

At the end of the 1st year $4.12 will grow to $4.28
At the end of the 2nd year $4.12 will grow to $4.46
At the end of the 3rd year $4.12 will grow to ?
At the end of the 4th year $4.12 will grow to ?
At the end of the 5th year $4.12 will grow to ?

Ask your teacher to assist you if you have difficulty in computing this table, but first try as hard as you can to calculate the table all alone because it is important that you become as familiar as possible with such computations if you want to understand how compound interest makes money grow rapidly.

You are all buying Thrift Stamps, each one costing 25 cents. But the Magic Thrift Lamp doesn't work on Thrift Stamps as the United States Government has not planned to pay interest on Thrift Stamps. The Magic Thrift Lamp does, however, work on War Savings Stamps. So make every effort to collect 16 Thrift Stamps as soon as you can. Then by paying a few cents extra, according to the month of the year, you can exchange the

* By working out Magic Table No. 2 as indicated, the amount obtained for the end of the 5th year will be $5.01 instead of $5. This means that $4.12 should amount to $5.01 in 5 years with interest at 4 per cent compounded annually. Since the Government redeems the War Savings Stamps at $5 instead of $5.01 this indicates that the real rate of interest is a very small fraction less than 4 per cent but for all practical purposes it is 4 per cent. If a War Savings Stamp is purchased on July 1, 1918, when the price is $4.18, it will be found by computation that slightly over 4 per cent compounded annually is realized. In this case $4.18 turns into $5 in 4½ years.

16 Thrift Stamps for a War Savings Stamp. As soon as you possess the War Savings Stamp, the Magic Thrift Lamp will make it begin to grow in value. Remember, too, that every time you buy a War Savings Stamp you are not only putting your money in a place where it will grow, but you are also helping the Government to pay the expenses of the great war, to buy food for your older brother or your father or your friends who are soldiers still in France, and ultimately to make a permanent peace. It isn't every day that you have a chance to help your country to make the world a safe place to live in and at the same time make your own money grow, is it? But that is just what you are doing when you buy War Savings Stamps. So buy all the War Savings Stamps you can and tell your friends what a wonderful investment these stamps are. Remember, too, that every War Savings Stamp is paying you 4 per cent compound interest. That's what we mean when we say that the Magic Thrift Lamp makes a War Savings Stamp grow.

Compound Interest Makes Money Grow at Wonderful Speed

There is another thing I want you to notice in Magic Table No. 1—*your money grows faster and faster the longer you leave it in the bank.* The first 6 months it grew from $100 to $102 which was a gain of $2. The last 6 months it grew from $119.51 to $121.90 which was a gain of $2.39. This speeding up is much greater if you extend Magic Table No. 1 further than 5 years. You can then see what would happen in 10, 20 or 50 years; but of course to extend Table No. 1 by the method that you have already used would require many long and difficult calculations.

A little further on in this article I have promised to tell you a secret by which you can easily find how large $100 would grow in 10 years, or 15 years, or in any number of years you might wish to use. But in order that you may now see how fast money does grow when it is a long time in touch with the Magic Thrift Lamp (that is, when it is so invested that it will earn compound interest for a great many years), I will tell you a few things that I learned by knowing the secret of computing compound interest easily. When you know this secret you can easily calculate this new table yourself. Let us call this

MAGIC TABLE No. 3

Interest compounded every 6 months at the rate of 4 per cent

In 5	years	$100	will turn	into	$121.90	
In 6	years	$100	will turn	into	$126.82	
In 10	years	$100	will turn	into	$148.59	
In 15	years	$100	will turn	into	$181.14	
In 17½	years	$100	will turn	into	$200.00 *	(199.99)
In 20	years	$100	will turn	into	$221.00	(220.80)
In 28	years	$100	will turn	into	$300.00	(303.12)
In 35	years	$100	will turn	into	$400.00	(399.96)
In 40	years	$100	will turn	into	$487.00	(487.54)
In 41	years	$100	will turn	into	$500.00	(507.24)
In 45	years	$100	will turn	into	$600.00	(594.31)
In 49	years	$100	will turn	into	$700.00	(696.33)
In 50	years	$100	will turn	into	$724.00	(724.46)
In 52½	years	$100	will turn	into	$800.00	(799.87)
In 55	years	$100	will turn	into	$883.00	(883.11)
In 58	years	$100	will turn	into	$1,000.00	(994.53)
In 70	years	$100	will turn	into	$1,600.00	(1,599.65)

Let us examine this Magic Table No. 3, to see how much faster money grows if invested for a long time than if invested for only a short time. The first 5 years your money grew from $100 to $121.90, which was a gain of $21.90; the second 5 years it grew a little faster from $121.90 to $148.59, which was a gain of $26.69; while for the third 5 years it grew still faster from $148.59 to $181.14, which was a gain of $32.55. Now if you skip ahead and note the speed for the eighth 5 years (that is, from 35 years to 40 years) you find that during these 5 years the money grew very rapidly from $400 to $487, a gain of $87. Skipping ahead still further to the eleventh 5 years (from 50 years to 55 years) you find your money is now growing at a remarkable speed from $724 to $883, a gain of $159. This means that your original $100 grew $159 worth during a single 5 years (from 50 years to 55 years) while it grew $87 worth during the eighth 5 years and only $21.90 worth during the first 5 years. This shows us that during the eighth 5 years your money was growing over four times as fast as it grew the first 5 years, while

* The figures from this point to the end of this table are given approximately in order to aid the memory and to simplify some of the explanations which follow. The exact values are given in parentheses to the right.

in the eleventh 5 years it was growing over seven times as fast as during the first 5 years. I am sure that you all understand now why compound interest can make a dollar grow to a much larger amount for a young boy or girl than it can for an older one or for an adult.

Thus you see that under the influence of the Magic Thrift Lamp (compound interest) the growth of money is like a sled coasting down a long hill. You know that the sled goes faster and faster all the time. If the hill is long and steep enough so that the sled can coast for 40 or 50 seconds, you know that it will be going at a terrific speed the last few seconds. In the same way compound interest makes money grow at a lightning speed if you only will give it time enough.

As I said before, the wonderful things in Magic Table No. 3 will not happen unless you leave the money undisturbed where it will earn compound interest, just as the boy coasting down hill can have the fun of going like the wind the last few seconds only on condition that he does not stop after he once gets started.

The other interesting thing is that compound interest looks after making this money grow without any work whatever on your part and without your having to add to it. Of course, if you do add to it, it will grow all the faster just as the boy's sled would go faster if it were pushed now and then. Savings Table No. 4 on page 451 tells you what will happen if you do add regularly to your original savings.

In this Magic Table No. 3 interest has been compounded every 6 months at the rate of 4 per cent. The great secret of the Magic Thrift Lamp, when you learn it, will tell you how to compute any kind of magic table at any rate of interest like 4½ per cent, 5 per cent, or 6 per cent for any number of years.

How Money Doubles Itself

There is another interesting fact shown by Magic Table No. 3. In 17½ years you find that $100 grows to $200. This means that any sum of money doubles in 17½ years when invested at 4 per cent with interest compounded semi-annually. For example, $1 will turn into $2, or $5 will turn into $10 in 17½ years. Therefore, if you wish another illustration of how money grows at an astonishing rate, you merely have to keep applying the fact

that money will double every 17½ years. Let us start with $100. In 17½ years it has become $200. But this $200 will double in another 17½ years (or 35 years from the beginning), thus becoming $400. And this $400 will become $800 in still another 17½ years (or 52½ years from the beginning), and the $800 will become $1,600 in another 17½ years (or 70 years from the beginning). In turn $1,600 will become $3,200 in another 17½ years (or 87½ years from the beginning), and $3,200 will become $6,400 in another 17½ years (or 105 years from the beginning). Thus you see that a single $100 grows to the enormous sum of $6,400 in 105 years.

If you continue this repetition you would have the following possibilities which you can easily verify for yourself:

In 105	years	$100	grows to	$6,400
In 122½	years	$100	grows to	$12,800
In 140	years	$100	grows to	$25,600
In 157½	years	$100	grows to	$51,200
In 297½	years	$100	grows to	$13,107,200

By extending this table your most extravagant dreams may be realized. If in 1620 when the Pilgrims came to America some far-sighted Pilgrim father had left $100 with the understanding that it was to be put out at compound interest at 4 per cent and left undisturbed until to-day, that original $100 would have grown during the past 297½ years to be over $13,107,200! In 17½ years from to-day this $13,107,200 would double and be $26,214,400. And in 1492 when America was discovered if Columbus had sold $100 worth of the many treasures he took back to Spain and had invested that amount to the credit of this country, that $100, if undisturbed all this time, would to-day have become over $2,000,000,000, as much as one of our Liberty Loans.

I read recently how a small legacy left to an American college about 150 years ago had grown to be an enormous fortune to-day merely because it had been undisturbed during that period. You can readily understand this now that you have learned to appreciate the remarkable results to be had by so investing money that compound interest can work upon it. You should always remember that with interest compounded semi-annually at 4 per cent *money doubles in 17½ years, quadruples in 35 years, and grows eightfold in 52½ years.*

What do Luxuries Actually Cost?—A Guide for Spending Money

We are all frequently tempted to spend money for luxuries and foolish pleasures. It may be a toy or trinket that we desire, or an ice-cream soda, or a ticket to the 'movies'. These are all things we are apt to go to extremes in wanting, and without which in many instances we could get along just as well. Unfortunately, in spending money for such pleasures as these, we rarely stop to consider what the luxury is really costing us. If it is a trinket that we buy for $1, we are apt to think of its cost to us as only $1, but since this trinket is an extravagance it actually costs us much more than $1; its real cost to us may be as much as $7 or $8. Likewise the ice-cream soda for which we pay 10 cents may really be costing us 70 cents or 80 cents. I am sure you will all agree that we would all stop to think before indulging in many ice-cream sodas at 80 cents each.

Let us see why it is that luxuries really cost so much more than we pay for them. This is easily seen if you will go back and look at Magic Table No. 3. In that table you learn that $1 will turn into $2 in 17½ years. If you are 12 years old now, this means that if you save $1 to-day it will grow to be $2 by the time you are 30 years old. But when you are 30 years old you may need money to go into business or to buy a home for yourself. Suppose, then, you are tempted to buy some luxury to-day that would cost $1, a luxury which you can just as well get along without. If you do buy it, you are spending $1 which if saved would grow to be $2 when you are 30. By spending the $1 to-day then, you will have $2 less when you are 30 years old. When you get to be 30 years old and look back upon it you will see that as a matter of fact that luxury cost you $2.

Let's look at this in another way. From Magic Table No. 3 we see that if you save $1 to-day (at 12 years of age) it will grow to be $4 when you are 47 years old. But when you are 47 years old, your parents will be old people and may need your help. Every dollar you spend to-day, then, is the same as spending $4 that you might otherwise have when your parents are old. If, at the age of 47, you look back upon the trinket you bought at the age of 12, you will see that it really cost you $4 instead of

$1. And in the same way the ice-cream soda for which you paid 10 cents actually cost you 40 cents. And the 'movie' show for which you paid 15 cents in reality cost you 60 cents.

But to get a full notion of the actual costs of luxuries you should look ahead still further. If you are 12 years old now, Magic Table No. 3 tells you that $1 saved to-day will grow to be $8 when you are 65 years old. But at 65 years of age you, like most people, will probably stop working and should have saved enough by that time to support yourself for the rest of your life. You may recall that you learned earlier in this article that 97 old people out of every 100 have not saved enough by the age of 65 to support themselves, and that they are obliged to depend upon relatives for support. Certainly you do not want to be one of these 97 old people. But if you spend $1 foolishly to-day you are spending $8 that belongs to your old age. When you are 65 then and look back upon it you will see that the toy for which you paid $1 actually cost you $8, and the 10-cent ice-cream soda really cost 80 cents, and the 15-cent 'movie' cost $1.20.

We see therefore that all luxuries, which in no way contribute to our good in a permanent way, are very expensive and that in the end they cost from two to eight times what we originally pay for them. Your guide before spending money for luxuries, then, will be always to ask yourself this question: "If I buy this trinket to-day, what will it really have cost me when 20, 30, or 40 years from to-day I look back upon it?" "Can I afford to pay $8 out of the money that belongs to my old age for this $1 luxury?"

Very few $1 trinkets are worth $8 and still fewer 10-cent sodas are worth 80 cents. Do not rob your own pocketbook of 30, 40, 50 years from to-day by paying such high prices now for useless things. Perhaps the most important lesson a boy or girl can get from this article is to learn to think about his expenditures in this careful way.

How to Form the Habit of Saving

But there is a still more important thing for you to do if you wish to learn the art of saving. When you have resisted the temptation to purchase a luxury, then immediately put the

sum thus saved in the bank and leave it there so that compound interest will begin to work upon it. *Do not put the sum back in your pocket only to wait some other temptation to spend it*, a temptation a little stronger perhaps than the first one. One secret of saving is to put the amount saved in the bank as soon as possible after resisting the first temptation to spend it. In this way you will get into the habit of saving and this is an excellent habit to acquire. The way to form any habit is to keep doing the thing over and over again. A boy learns to swim by keeping at it until he doesn't have to think about it, until it becomes a habit. And a girl learns to knit in the same way. Get the habit of saving by saving regularly every week or month until the habit is so strong that you will save regularly, without having to force yourself to do it. On pages 451 and 453 you will find Savings Tables No. 4 and No. 5 which show how fast money grows in a savings bank when you add regularly to your savings.

Another good thing when spending money is to remember that it is on the useless little things that much of our money is wasted, such as the 5 cents spent for candy or the 10 cents for a soda. It is important for all of you carefully to keep track of the amount you thus really waste each week or month and you will probably find that more dollars are wasted thus than by purchasing those luxuries that are more expensive. By all means, stop these small wastes and turn them into savings.

The Great Secret of the Magic Thrift Lamp*

And now I must keep my promise and tell you the great secret of the Magic Thrift Lamp. You recall that we found that compound interest was the essential element in this secret but we found that it was very difficult to compute compound interest by the methods of arithmetic alone. I am going to show you an

* Note for Teachers. For pupils of the sixth and seventh grades, and possibly for some eighth grade pupils, it may be advisable to omit the topics from this point up to page 455 inclusive, except Savings Tables No. 4 and No. 5 on pages 451 and 453. The teacher should fully familiarize herself with the omitted pages in order to show sixth and seventh grade pupils how to use the Savings Tables. It is very important not to omit, even for sixth grade children, the actual using of Savings Tables No. 4 and No. 5, the work on Liberty Bonds on pages 455 to 458, and the final work on pages 458 to 460.

For high school pupils, even those just starting algebra, it should not be necessary to omit any portion of the work. The algebraic treatment here given has been so simplified that it is easily within the reach of first year high school pupils.

easy way to do this. And it is important to know this so that you may calculate definitely in advance just what goal you can attain by systematically saving money. There is little encouragement in saving if there is to be an uncertainty as to the results. We should know definitely what we may expect after all of our effort. And right here let me say that it is this element of certainty and absolute dependability which distinguishes the real secret of thrift from the uncertain and haphazard methods of investment which are so frequently offered. The secret of thrift which I have for you is absolutely certain; it cannot and will not fail you if you follow it exactly. It is the only secret which great financiers recognize as safe in making investments upon which they can absolutely depend, and it is the only way in which they invest funds held in trust for others.

And now for the secret which enables us to calculate for ourselves in an easy way tables like Magic Tables No. 1 and No. 3. This means an easy method for computing compound interest. Suppose that we put $1.00 in the bank at interest at 4 per cent, compounded annually. At the end of the year the interest will be $0.04 which we may add to $1.00, thus giving us $1.04 in the bank at the end of the year. An easier way to get this same answer is to take 104 per cent of $1.00 which will give us the same $1.04 at the end of the first year. In the same way the easy way to find the total amount of money in the bank at the end of the second year is to take 104 per cent of 1.04 which gives us 1.04×1.04 or 1.04^2. To obtain the amount at the end of the third year, we take 104 per cent of 1.04^2 which gives us 1.04×1.04^2 or 1.04^3. This may be summed up as follows, for interest at 4 per cent.

At the end of 1 year $1.00 will grow to $1.04
At the end of 2 years $1.00 will grow to 1.04^2 or $1.0816
At the end of 3 years $1.00 will grow to 1.04^3 or $1.1249
At the end of 4 years $1.00 will grow to 1.04^4 or $1.1699
At the end of 5 years $1.00 will grow to 1.04^5 or $1.2167
At the end of 10 years $1.00 will grow to 1.04^{10} or $1.4802
At the end of n years $1.00 will grow to 1.04^n

By observing this table carefully you see that the amount to which $1 will grow in 5 years at 4 per cent interest compounded annually is found by raising 1.04 to the 5th power which means

to multiply as follows: $1.04 \times 1.04 \times 1.04 \times 1.04 \times 1.04$. In the same way, the amount of \$1.00 at the end of 7 years is $\$1.04^7$. If the interest rate is 5 per cent instead of 4 per cent, the amount of \$1.00 at the end of 7 years would be $\$1.05^7$. And if you wish to know the amount to which \$9 will grow in 7 years at 5 per cent you multiply $\$1.05^7$ by 9.

The Thrift Formula

Thus you see that we have worked out a rule for calculating compound interest easily. It has taken a good many words to state this rule, but we can write the rule very briefly in a kind of shorthand by using letters to stand for numbers as we do in algebra. Let us do this by agreeing to

Let n = the number of years,
r = the rate of interest,
P = the number of dollars of the principal,
and S = the amount or sum at the end of n years.

Our rule stated above then becomes

$$S = P\,(1.00 + r)^n$$

You see how compact this is. Such a compact statement, written in the shorthand of algebra, is called a *formula*. This formula is of great importance to us and I am going to call it the *Thrift Formula;* it is also sometimes called the *Compound Interest Formula* or the *Compound Interest Law*. I want you always to associate the idea of compound interest with the Thrift Formula. This wonderful Thrift Formula is the secret of the Magic Thrift Lamp which is the secret that explains how money grows. All sound investment depends absolutely upon its use. It is the secret that makes men rich. It tells us the fastest safe way to make our savings grow.

The magic and the secrecy of this Thrift Formula does not consist in the fact that it is written in algebraic shorthand, for you understand such a way of writing. To those who do not know algebra, this might seem to be a secret form of writing, but even those in the seventh and eighth grades can readily understand its meaning. The secret about this Thrift Formula is that most people don't know about it. Unfortunately, it rarely ever appears

in our high school algebras, while for both boys and girls it is probably one of the most important things they could learn from algebra. Further, it is so simple that there is no reason why it shouldn't be given you during your first year's study of algebra.

How to Use the Thrift Formula

I must tell you a few things about using this formula easily. Suppose that you wish to find the amount to which $500 will grow in 6 years at 5 per cent, compounded annually.

Substituting in the Thrift Formula we get

$$S = 500\ (1.00 + 0.05)^6,$$

which means $S = \$500 \times 1.05^6$.

We first find 1.05^6 and then multiply $500 by the result. To get the value of 1.05^6 requires considerable multiplying for it means $1.05 \times 1.05 \times 1.05 \times 1.05 \times 1.05 \times 1.05$.

There is an easier way to do this, however, if we remember that $a^3 \times a^3 = a^6$ for this tells us that $1.05^3 \times 1.05^3 = 1.05^6$.

It is easy to find 1.05^3, which is 1.157625. So if we multiply 1.157625 by 1.157625 we get 1.3400956, which is 1.05^6. But, of course, it isn't necessary to use all these decimal places. For our purposes, the answer is sufficiently accurate if we multiply 1.1576 by 1.1576. Similarly, if you wish to get 1.05^7 you could change it to $1.05^2 \times 1.05^2 \times 1.05^3$, since $a^2 \times a^2 \times a^3 = a^7$.

You now have a method which would enable you to calculate Magic Table No. 1 or Magic Table No. 3. In the case of Magic Table No. 3 you must remember that interest is paid semi-annually so that to find the interest for 17½ years at 4 per cent paid semi-annually is the same as finding it for 35 years if figured annually at 2 per cent. This would mean that you would have to perform this astonishing multiplication, 1.02^{35}, which, of course, you can do if you will have patience and break it up into

$$1.02^5 \times 1.02^5 \times 1.02^5 \times 1.02^5 \times 1.02^5 \times 1.02^5 \times 1.02^5$$

and be careful to omit unnecessary decimal places.

A still simpler way to make these calculations is to use logarithms. High school students who have studied trigonometry have probably learned logarithms. Every high school student, however, should know logarithms long before he gets to trigo-

nometry, for they are one of the greatest inventions the world has ever known to reduce the drudgery of calculation. With logarithms you can *multiply two numbers together without multiplying at all*, but simply by *adding two other numbers*. You have seen this done when you multiplied $a^3 \times a^7$ by adding 7 and 3 and obtained a^{10}. Logarithms make use of this same principle which you learn early in algebra. Just as soon, therefore, as you understand that $a^3 \times a^7 = a^{10}$ you are prepared to study logarithms. By means of logarithms, therefore, it is a very simple matter to raise 1.02 to the 35th power. Ask your teacher to teach you logarithms in your first year algebra classes.

Another way to simplify calculations with the Thrift Formula is to use tables which have been prepared which give us the powers we most need. A table calculated for 5 per cent would give us the following:

$$1.05^1 = 1.0500000$$
$$1.05^2 = 1.1025000$$
$$1.05^3 = 1.1576250$$
$$1.05^4 = 1.2155063$$
$$1.05^5 = 1.2762816$$
$$\text{etc.}$$

This, you see, would make the calculations very easy. You are then obliged to use logarithms only when the table does not give you what you want, which, of course, sometimes happens.

How Savings Grow when We Add Regularly to Them

In the Magic Tables No. 1 and No. 3 you learned what would happen to a sum of money if you saved it for a period of years but did not add to it from year to year. I am now going to show you another wonderful application of the Thrift Formula which tells you how rapidly a sum will grow *if you add to it regularly*. In Magic Table No. 3 calculations were made every 6 months. If the interest were compounded once a year at 4 per cent instead of every 6 months, in 5 years $1 would grow to be $1.217. You can easily see that this is true by using the Thrift Formula, which will give you 1.04^5 which equals $1.217. But this $1.217 all comes from the growth of the original $1 after it has been invested for 5 years; that is, nothing has been done to add other

dollars to the amount during the 5 years. Let us see, then, what sum you would have at the end of five years if on January 1, 1919, you deposited $1 in a savings bank, paying 4 per cent annually and added another dollar to it each year, allowing the Thrift Formula to work on each dollar thus saved.

The $1 deposited January 1, 1919, would remain in bank for 5 years and would equal $1.04^5.

The $1 deposited January 1, 1920, would remain in bank for 4 years and would equal $1.04^4.

The $1 deposited January 1, 1921, would remain in bank for 3 years and would equal $1.04^3.

The $1 deposited January 1, 1922, would remain in bank for 2 years and would equal $1.04^2.

The $1 deposited January 1, 1923, would remain in bank for 1 year and would equal $1.04^1.

By adding the above amounts together we find that the total number of dollars available January 1, 1924, that is, at the end of 5 years, would be:

$$(1) \qquad 1.04 + 1.04^2 + 1.04^3 + 1.04^4 + 1.04^5$$

We see that this is a geometric series, which we study about in algebra, and that it is similar to the series

$$(2) \qquad b + b^2 + b^3 + b^4 + b^5$$

In the study of geometric series we learn an easy formula * for adding a series like (2). By the aid of this formula we obtain

$$(3) \qquad \text{The sum of 5 terms} = \frac{b^6 - b}{b - 1}$$

To get the sum of series (1) we may substitute 1.04 for b in expression (3) thus obtaining the following expression

$$(4) \quad \text{Sum at end of 5 years} = \frac{1.04^6 - 1.04}{0.04} = 5.633$$

* The formula for the sum of a geometric series is $\frac{ar^n - a}{r - 1} = \frac{a(r^n - 1)}{r - 1}$

where a = first term, r = ratio, and n = number of terms.

Noting in our series (2) that $a = b$, $r = b$, and $n = 5$ and substituting these values in the formula, we obtain (3) above

From (4) we see that $1 put in the bank at the beginning of each year for a period of 5 years will amount to $5.633 at the end of the 5th year. If $5 were saved each year, instead of $1, the total amount at the end of 5 years would be $5 \times \$5.633$ or $28.165.

The Savings Formula

Let us now make a new formula which will enable us to find the amount of money which will be available at the end of any number of years at any rate of interest if $1 is saved at the beginning of each year. Such a formula may easily be obtained from (4) above by letting r represent the rate of interest, and n the number of years (which is the same as the number of terms in the geometric series). This gives us $(1.00 + r)$ in place of 1.04. Making these substitutions in (4) we obtain

$$(5) \qquad S_n = \frac{(1.00 + r)^{n+1} - (1.00 + r)}{r}$$

where S_n = total amount at the end of n years.

The men in charge of investment calculations in banks and bond houses usually write (5) in a form more convenient for calculation* as follows:

$$(6) \qquad S_n = \frac{(1.00 + r)^{n+1} - 1.00}{r} - 1$$

Because of the great importance of (6) I shall call it the *Savings Formula.* It should be observed that in obtaining this formula we made use of the Thrift Formula with which we are already familiar and thus again brought into play the power of compound interest. I should repeat at this point that all successful investment depends upon making use of the element of compound interest. By means of the *Savings Formula* you can work out Savings Table No. 4 on the next page.

In computing Column B of this Savings Table you should note that at the rate of 4 per cent per year the interest for 6 months is 2 per cent. This means that the interest for 6 months at the rate of 4 per cent is the same as the interest for one year, computed annually, at 2 per cent; similarly, the interest for 1½ years (which is three periods of 6 months each) at 4 per cent

* In making calculations with formula (6) high school pupils will find it most simple to use a 5-place or 6-place table of logarithms. One may also use investment tables especially compiled to facilitate calculations according to this formula.

SAVINGS TABLE No. 4

Column A of this table shows how much $1 deposited in the bank at the beginning of each year will amount to at the end of any year at 4 per cent interest, compounded annually.

Column B shows how much $1 deposited in the bank at the beginning of each 6 months will amount to at the end of any year at 4 per cent interest, compounded semi-annually.

At the End of Year	*Column A*	*Column B*
½		$1.020
1	$1.040	2.060
1½		3.122
2	2.122	4.204
2½		5.308
3	3.246	6.434
3½		7.583
4	4.416	8.755
4½		9.950
5	5.633	11.169
5½		12.412
6	6.898	13.680
6½		14.974
7	8.214	16.293
10	12.486	24.783
17½		50.994
20	30.969	61.610
25	43.312	86.271
30	58.328	116.333
35	76.598	152.977
40	98.827	197.647
50	158.774	318.477

per year, computed semi-annually, is the same as the interest for 3 years at 2 per cent computed annually. Therefore, in substituting in the *Savings Formula* on page 450 to find the amount for 1½ years, let $n = 3$ and $r = 2$ per cent; similarly for 5 years, let $n = 10$ and $r = 2$ per cent. It is very simple to use the above table. If you put $50 instead of $1 in the bank each year and wish to know the total amount you will have available at the end of 20 years, you multiply $30.969 (which is found in Column A of the table opposite 20) by 50, which will give $1,548.45.

The remarkable magic of compound interest is again apparent when you examine this table. If you are 15 years old now, in

50 years you will be 65 years old. If for these 50 years you save but $1 a year you see by the table that at age 65 you will have $158.77, but if you could manage to save $100 a year you would have 100 × $158.774, or $15,877.40 at age 65. This $15,877.40, if economically used from age 65 on, would keep you the rest of your life. If used to buy an annuity, which I will describe later, it would yield an annual income of over $1,600 from age 65 on as long as you live.

Savings Table No. 4 shows us in Column B the result of depositing $1 in the bank at the beginning of each 6 months. For certain purposes it is sometimes more convenient to have a Savings Table which will give the result of depositing $1 in the bank at the end of each 6 months, instead of at the beginning of each 6 months. Such a table is Savings Table No. 5 given on the next page.

In making Savings Table No. 5 each item of Column D was obtained by multiplying the corresponding item of Column C by 2. Similarly, the items of Column E were obtained by multiplying the corresponding items of Column C by 2.125. If one wishes to find the result of depositing $7 in the bank at the end of every 6 months all that is necessary to be done is to multiply each item of Column C by 7.

By examining Column C of Savings Table No. 5 carefully you will see that it is closely related to Column B of Savings Table No. 4. If the third item of Column C, which is $3.06 (opposite 1½ years), is diminished by $1 you will obtain $2.06 which you will note is the same as the second item of Column B (opposite 1 year). Similarly, if the sixth item of Column C, which is $6.308, is diminished by $1 you get $5.308, which is the same as the fifth item of Column B. If Column C had an item for every 6 months you could easily obtain Column B in the manner just indicated. By reversing the process Column C could be obtained from Column B. Space does not permit me, however, to give a complete list of items for Column B or Column C.

In the preceding paragraph I have not told you how to obtain Column C independently, but have merely pointed out how Column C could be obtained if you already had Column B complete for every 6 months. It is possible, however, to obtain Column C without any reference to Column B whatever. To

SAVINGS TABLE No. 5

Column C shows how much $1 deposited in the bank at the end of each 6 months will amount to at the end of any year or half year at 4 per cent interest, compounded semi-annually.

Column D shows how much $2 deposited at the end of each 6 months will amount to at the end of any year, interest at 4 per cent, compounded semi-annually.

Column E shows how much $2.125 deposited at the end of each 6 months will amount to at the end of any year, interest at 4 per cent, compounded semi-annually.

At the End of Year	*Column C*	*Column D*	*Column E*
½	$1.000	$2.000	$2.125
1	2.020	4.040	4.293
1½	3.060	6.120	6.503
2	4.122	8.244	8.759
2½	5.204	10.408	11.059
3	6.308	12.616	13.405
3½	7.434	14.868	15.797
4	8.583	17.166	18.239
4½	9.755	19.510	20.729
5	10.950	21.900	23.269
5½	12.169	24.338	25.859
6	13.412	26.824	28.501
7	15.974	31.948	33.945
10	24.297	48.594	51.631
15	40.568	81.136	86.207
16	44.227	88.454	93.982
16½	46.112	92.224	97.988
17	48.034	96.068	102.072
17½	49.994	99.988	106.237
20	60.402	120.804	128.354
25	84.579	169.158	179.730
28	101.558	203.116	215.811
33	134.749	269.498	286.342
33½	138.444	276.888	294.194
34	142.213	284.426	302.203
35	149.978	299.956	318.703
50	312.232	624.464	663.493
51	326.866	653.732	694.590
51½	334.404	668.808	710.669
52½	349.934	699.868	743.610

do this it is necessary to make up a new *Savings Formula*, in a manner similar to that used on pages 449–450 which will show the

amount in the bank at the end of each year (or half year) if the money is deposited in the bank at the *end* of the year (or half year) instead of at the *beginning* of the year. This formula is as follows:

$$A_n = \frac{(1.00 + r)^n - 1.00}{r}$$

where n = the number of years,
r = rate of interest,
A_n = total amount available at end of n years.

I am going to ask you to test your skill in algebra by trying to derive this new formula. By means of this new *Savings Formula* you can compute Column C directly without the necessity of referring to Column B.

Annuities and Life Insurance Depend upon Compound Interest

One safe way for old people to have a certain income to live upon for the remainder of their lives is to buy an annuity such as is sold by life insurance companies. This annuity is a yearly sum paid to a person by the insurance company as long as the person lives. For this annual payment he pays the company outright a certain sum. For example, for $5,557.09 a person of age 65 can buy outright an annuity which will pay him about $560 a year as long as he lives. If he lives to be 100 years old, the insurance company will still pay him $560 each year, that is, as long as he continues to live. The $5,557.09 paid outright at age 65 fully guarantees this continued payment. Of course, when a life insurance company sells an annuity it is taking a chance just as it does when it sells life insurance. A good way for a boy or girl to provide for his father and mother in their old age is to buy an annuity for them. In Europe people buy annuities much more often than they do in the United States. This is because we haven't yet awakened to their great value. Ask your teacher to tell you more about annuities, for they are very important. You can also get additional information about annuities by writing to any of the regular life insurance companies.

The formulas for annuities form an interesting application of high school algebra and are quite like the Thrift Formula and the

Savings Formula I have already given you. Like these formulas, annuity formulas depend upon the application of compound interest. All these formulas are much related and, as you have seen, have important control over savings and thrift.

Life insurance and all investments also depend upon the workings of these formulas. Life insurance is also a topic which your algebra can help you better to appreciate. Every time your father pays his life insurance premium a good share of the premium is immediately invested by the insurance company at compound interest. Thus the Savings Formula gets to work on the premiums paid in each year to make them grow to a large sum which is held to the credit of your father's policy, so that the life insurance company can with absolute certainty be able to pay your father's insurance in the case of his death. Thus we see that the magic of compound interest is again at work in the insurance office.

If you are interested in these important matters perhaps you can get your teacher to include them in your algebra course. These things will be much more interesting than some of the topics you may now have to study and at the same time will put you in touch with the whole field of thrift in such a way as to be most valuable to you all the rest of your life. And, moreover, these new topics will be as helpful to girls as to boys. Indeed, it is often more important for them, for a widow with children to take care of, cannot go out and earn money as easily as their father could.

How to Get $200 for a $100 Liberty Bond

To buy Liberty Bonds is the best investment you can make. And I have a secret for you as to their great value which many people do not seem to have thought about; I know how you can get $200 for every $100 Liberty Bond you buy, and, what is a still greater surprise I can tell you how to get $300 or $400, or even $800 for a $100 Liberty Bond! Let me give you the details of this secret by using a $100 bond of the Second Liberty Loan as an illustration. These bonds pay 4 per cent interest, payable every 6 months. Unfortunately the Government does not keep the interest for you each 6 months and permit it in turn to draw

further interest. Instead of this you are paid your interest at the end of every 6 months by the Government by means of coupons which you cut from the bond. Each coupon is worth $2.

And the secret lies in knowing what to do with these $2 coupons every 6 months! Put them in the savings bank immediately, where they will draw 4 per cent interest. If you do this you will be putting $2 into the bank at the end of every 6 months and you will thus get interest at 4 per cent compounded semi-annually. But this is just what we did in our Savings Table No. 5 given on page 453. If you will consult Column D of that table you will see that $2 deposited in the bank at the end of every 6 months will amount in 17½ years to $100 ($99.99 to be exact). This means that the savings bank will have $100 for you in 17½ years, all of which has come from the coupons alone. And your original bond, which produced these coupons, is still worth $100 so that you now have the $100 bond and besides the $100 from the coupons, making in all $200. By this device your $100 bond has grown to be $200.

If you wish, you can make the $100 bond turn into $400. If you again consult Column D of the Savings Table No. 5 you will find that if the $2 coupons are deposited in the bank each 6 months for 35 years they alone will grow to be $300 ($299.96 to be exact) which, added to the $100 the bond itself is worth, will give you $400!

And in the same way if your father should buy a $100 Liberty Bond for you at the age of 12 and all the coupons should be put each 6 months immediately in the savings bank and left there, then in 52½ years, when you become 65 years of age, that $100 bond will be worth $800! You can easily see why this is so by studying Column D. You can consider $699.87 which you find in Column D as approximately $700. The fact that the United States Government has not yet issued any Liberty Bonds which would mature as late as 52½ years from now does not detract from the effectiveness of this illustration since the money received for the Liberty Bond when it does mature can be reinvested at once in some other good 4 per cent bond and thus continue the plan here outlined.

You can therefore make up a table like the following:

SECOND LIBERTY LOAN, 4 PER CENT BONDS

Interest coupons to be deposited in the savings bank every 6 months and to earn in the bank 4 per cent compounded semi-annually

A $100 bond is worth $148.59 in 10 years
A $100 bond is worth $181.14 in 15 years
A $100 bond is worth $200.00 in 17½ years
A $100 bond is worth $300.00 in 28 years
A $100 bond is worth $400.00 in 35 years
A $100 bond is worth $800.00 in 52½ years

For the Third and Fourth Liberty Loans the Government is paying 4¼ per cent interest semi-annually. The coupons on these bonds pay $2.12 at the end of the first 6 months and $2.13 at the end of the next 6 months, and so on each year. For our purposes it will serve to consider the coupons as the equivalent of $2.125 every 6 months. Our plan of making bonds grow in value depends upon putting the coupons in the savings bank, but the savings bank usually pays 4 per cent, and not 4¼ per cent. Let us expect, therefore, that we will get 4 per cent interest compounded semi-annually in the bank. If you deposit $2.125 in the bank at the end of each 6 months, your savings will accumulate as shown in Column E of Savings Table No. 5 given on page 453. From Column E you will find that in 17 years you will have $100 ($102.07 to be exact) in the savings bank which added to the $100 that the bond is worth gives you $200. Thus a 4¼ per cent $100 bond grows to be $200 in 17 years while a 4 per cent bond requires 17½ years. By studying carefully Column E of Savings Table No. 5 you will be able to make a new table like the following in which the figures are approximately correct.

THIRD AND FOURTH LIBERTY LOANS, 4¼ PER CENT BONDS

Interest coupons to be deposited in the savings bank every 6 months and to earn in the bank 4 per cent compounded semi-annually

A $100 bond is worth $150 in 10 years
A $100 bond is worth $200 in 17 years
A $100 bond is worth $400 in 34 years
A $100 bond is worth $800 in 51 years

The Liberty Bond, then, like the War Savings Stamp, becomes the rare combination of an opportunity to help the Government

to finance this great war and at the same time to enable you to double your money in 17 or 17½ years. Many people have not seen this great advantage of the Liberty Bond and I hope you will tell all your friends about it so that in the next Liberty Loan all can take the opportunity to purchase some of these remarkable investments. But don't forget to tell your friends about the *Savings Formula* too, for unless they deposit the coupons in the savings bank each 6 months and leave them there, the scheme won't work. By means of the *Savings Formula* you can work out the following interesting problem. If some later Liberty Loan pays 4½ per cent interest, how long will it take for you to double your investment?

Another topic which you should study if you would know fully about thrift is that of bonds in general. Interesting work in high school can be done in the algebra class in this topic, especially in finding the yield in percentage to be had from bonds purchased at various prices. This begins to look like a new kind of algebra course, doesn't it? I hope you may all have an opportunity to pursue such a course.

The Dignity of Saving

There are some persons who think that it is a mark of distinction to spend money carelessly. These same persons look upon saving as vulgar and as a habit which is followed only by those who are very ordinary. There could be no more mistaken notion than this, for saving is one of the most dignified things we can do and it is practised by the most cultured, the most efficient, and even the most wealthy people. The world no longer respects the rich man who unwisely spends his wealth; public opinion holds him responsible for using his money in the most effective way.

No one is more careful than the millionaire to see that his money is so invested that the compound interest law will work upon it, which means that so far as possible he does not disturb his investments after they are made. The millionaire, too, is very careful to put his money in safe securities paying from 4 per cent to 5 per cent. He looks with great care upon investments paying a higher rate of interest. If a wealthy man puts his money in a business enterprise he demands that the business shall be conducted efficiently, that all wastes shall be eliminated,

and that every possible saving shall be effected, for he knows that a large source of profits comes from the avoidance of useless expenditure.

If such a point of view is taken by the man who has plenty of money, how much more important it is that all of us who are not rich should look after our money thoughtfully by cutting down expenditures for luxuries, by saving systematically, and by seeing that our savings are put where compound interest may work upon them.

Summary of Suggestions on Thrift

1. Save the many small amounts like 5 cents and 10 cents spent for luxuries.

2. Remember that the actual cost of any purchase is not the sum you pay for it to-day but the amount to which that sum would grow to be in 10, 20, or 30 years at compound interest. Let pages 442 and 443 be your guide in spending.

3. Save regularly a fixed amount of your allowance or salary, at least 10 per cent of it if possible. It is important for a child to try to save a definite amount each week, such as 10 cents, 15 cents, or 25 cents. The amount thus accumulated should be invested in Thrift Stamps or War Savings Stamps or put in the savings bank regularly. Study carefully the Savings Tables on pages 451 and 453.

4. When the temptation to spend money for a luxury has been resisted, provide at once for the permanent saving of that sum before some other stronger temptation to spend it may come.

5. Make use of the real secret of saving which all financiers use, which is to put savings at once in some place where compound interest can work upon them. One of the best ways to get the immediate effects of compound interest is to invest in War Savings Stamps. The savings bank also gives a similar opportunity.

6. Make yourself fully familiar with the remarkable power of compound interest to make money grow, described on pages 438 to 441. To be most effective in its result compound interest requires a number of years to work, the greater the number the better. Therefore, do not disturb your money after you have once put it in a dependable investment.

7. Put money only in investments of recognized security. Such investments pay from 4 per cent to 5 per cent interest. Many investments paying a higher rate of interest are unsafe and much money is lost in such investments. The safest investment for all of us is the Liberty Bond. Remember the wonderful possibility of getting $200, $300, or more for every $100 Liberty Bond you own by carrying out the suggestions on pages 455 to 457.

8. From time to time check up your success in life by the method used by the late James J. Hill, one of America's greatest financiers, who said, "No matter what a man's income, the measure of his success in life is what he saves."

HEALTH EXERCISES FOR EVERYDAY USE

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When the Provost-Marshal General of the Army announced the result of the Selective Draft, showing the percentage of men rejected by the draft boards and by the Medical Corps in the cantonments, there arose at once everywhere comments on our physical unfitness. Furthermore, evidence from other sources has proved that men over thirty years of age would show still greater percentage of defects, and women of draft age physical deficiency to a corresponding degree. In fact, statistics have revealed that fifty per cent of our population is unfit according to the standard of the Army. These statements of defectiveness, together with the marked improvement in health and efficiency of those who have passed through the cantonments, prove that a vast part of our population is unfit not only for war, but also for the most efficient work in peace. From this realization of our national physical unfitness there has come an understanding of national needs, such as the need for adequate child hygiene, the need for competent medical inspection and rational physical education, and the need for national service of a democratic and universal kind.

This interest in physical vigor and efficiency is not confined, however, to those who are called into active war service, for today, more than ever before, people in late adult life are concerned about their health. The sedentary worker and all those 'behind the lines' are interested in avoiding the degenerative changes that so frequently mar productive work and happiness. It is not surprising, then, that everywhere efforts are being made to improve the health of this part of our population. The newspapers and magazines are filled with articles on the subject of civilian health. The National Security League through its committee on physical reserve is seeking to help maintain the health and efficiency of

teachers, workers in factories, clerks, members of Congress, and even the President's Cabinet.

However, some of the work in this direction misplaces the emphasis and only a narrow and incomplete program is the answer to the tremendous national interest in health. A program must be devised that will formulate compelling health motives and ideals, that will offer a comprehensive plan for securing adequate health care and instruction in all schools, and that will provide safeguards to workers in field and factory, in office, shop, and mine. Little consideration should be given that noisy group of health fakers who as 'professors' are able to commercialize and exploit this interest by inducing great numbers of the credulous to seek "health, strength, and vigor" by a "special system of breathing."

The following exercises are offered, therefore, in response to the request of many who desire a series of setting-up exercises as a means of maintaining physical vigor. More than eight hundred students of the 1918 Summer Session of Teachers College were taught this series, and the enthusiasm of its reception justifies a description of the series in the RECORD.

In presenting a series of setting-up exercises it is important to emphasize certain limitations. It does not represent a complete system of physical education, nor may it be considered in all cases to provide everything that is necessary to maintain health. At best it is only a substitute for more wholesome exercise out-of-doors in the form of games and recreative sports. The following points, therefore, should be noted:

1. There is no short-cut, no royal road, no easy way to health. The development and preservation of physical vigor require intelligent care of the body and scrupulous regard for the laws of health. One cannot with safety and assurance contract a few muscles, breathe deeply a few times, and obtain organic strength. In addition to exercise, other factors must be considered, such as a healthful attitude of mind, the choice of proper recreation, the intelligent selection of food, the adjustment of work and play, and the care of the body functions. All are as important as exercise. It ought to be unnecessary to say that one cannot misuse the mind and body, and then breathe a few times, take a pill, and remain vigorous.

2. Health exercises as a rule have been devised to produce effects which could be felt by the person taking them. The idea that an exercise must be

felt in order to be valuable is similar to the idea that medicine must have a nasty taste and a mysterious color in order to be potent. On the contrary, the most desirable sort of physical training will not produce soreness and will in no way strain the muscles.

3. Exercises usually offered to the public are based upon the artificial and unnatural movements of the Swedish or German systems. It should be appreciated more generally that the movements which man has made in developing from the lower forms of life into the human being that he now is are more suited to his needs than movements which are wholly unrelated to his phylogenetic inheritance.

4. Many of the exercises often proposed are distinctly harmful. For example, the human being should not bend the trunk backward (except in corrective gymnastics where the support is controlled), and breathing exercises which have no relation to physiologic needs of the body are often injurious.

The exercises that follow are natural movements; hence they are offered with the belief that they will be of some value to the sedentary worker in school or office. They will serve to provide some activity of a *natural* kind, and should be supplemented with as much wholesome out-of-door exercise as is necessary to provide that 'margin of motor activity' essential to individual health.

They do not represent a complete system of body building. They are not devised to meet the play requirement of children nor the recreative needs of adults. They will set up the body, but they will not restore a damaged heart, nor bring strength to a paralyzed muscle. They will help, however, in securing good posture; but they will not cure a crooked back nor remove fat from the abdomen and deposit it on the shoulders.

These exercises should be performed on arising in the morning and should be followed by the morning bath. They are devised to produce wholesome effects upon circulation and respiration, and they will aid digestion and elimination. Since they are devised to secure an uplift of the body in all the movements, the accent should be upward. In addition, the trunk muscles are vigorously worked and the correct use of the foot is favored.

The necessity of supplementing these movements with out-of-door exercises must again be emphasized. Such activities as walking, hiking, tennis, swimming, coasting, skating, horseback riding, canoeing, golf, dancing, athletic sports and games are

suggested, but the extent of participation in them must be determined by the needs, capacities, and limitations of the individual.

The following description should be carefully noted and the pictures studied in learning the exercises.

Standing (Fig. 1)

The standing exercise (Fig. 1) is used to help in achieving a good standing posture. Much of the posture work in the schools is bad on account of the rigid and unnatural position attained. The body is too frequently put into such a posture that the relation of parts prevents quick and controlled action. One should seek to attain in standing an erect position without rigidity, thus insuring healthful functioning of abdominal organs, proper use of joints, and efficient use of the musculature of the body.

Exercise

Stand with the feet parallel to each other and 6 to 8 inches apart. Place one foot (either one) 3 to 4 inches in front of the other. Have weight on both feet disposed to their outer edges. This position of the feet produces balance, pivot and control. Push the trunk upward and lift the abdominal wall upward. Retain a feeling of relaxation in the shoulders, but secure a sensation of extension and lengthening of the body without contracting or tensing the muscles. (Fig. 1)

Guides in Performance

1. Avoid rigidity.
2. Secure straightening of the spine but keep the shoulder muscles relaxed.
3. Keep the weight off the heels.
4. Pull the abdominal wall upward and keep the lower half of the abdominal wall constantly flattened.

Command

For individual performance of the exercises no commands are required. Directions are given, however, for use in group instruction where commands are necessary.

The commands have two parts separated by a pause. The length of the pause should vary according to the needs of the group and the exercise. The first part of the command is preparatory; the second is executive. These parts should be spoken in such a way as to convey in the voice the manner of action expected.

The command for this first exercise is: *Class—Stand!*

Stretching (Figs. 1 and 2)

This is a natural movement that straightens the spine, lifts the chest, and overcomes the sagging of the abdominal muscles so commonly seen in adults.

Exercise

On the command *One!* push the arms easily upward and rise on the toes as far as possible. Reach up as far as possible as if trying to get an object from a high place. (Fig. 2)

On *Two!* let the arms sink and the heels touch the floor, but retain as long as possible the sensation of extension. (Fig. 1) Do not let the body droop. The development of the proper muscle sensation is important.

Guides in Performance

1. Avoid tenseness and rigidity.
2. Do not bend backward.
3. Avoid angular movement of the arms. Do not swing them up; push them up.
4. Perform with a feeling of relaxation rather than contraction.
5. Repeat the movement 10 times. (In the beginning, 2 or 3 times is sufficient for all the movements which are to be repeated.)
6. Do not execute the movement rhythmically for in rhythmical exercises it is more difficult to get the correct form at the end of the movement. The form in this movement is important.

Command

1. *Ready for Stretching—Stand!* (Take the position in Fig. 1.)
2. *Stretching—One!* (Fig. 2) *Two!* (Fig. 1)

Throwing (Figs. 3 and 4)

This is a natural movement used by man in throwing a ball at an object. In learning movements that involve complex coördinations, do not think of the 'end' of the movement but keep clearly in mind the 'means' to that end. Follow closely the directions for arm, leg, and trunk movement, and the coördination will come.

This movement is a powerful trunk exercise. It uses the back and side muscles and brings into play the large muscles of both arms and both legs.

The first part of the movement (Fig. 3) corresponds to the second part (Fig. 4) in position of trunk and legs. If the arms in Fig. 3 were placed in the position shown in Fig. 4, the similarity in the two parts of the movement would be instantly apparent.

EXERCISE

Stand with feet about 24 inches apart and with the left foot about 6 inches in front of the right. On *One!* clasp hands lightly, waist high as shown in Fig. 3, shift weight to the right foot, bend the right knee, draw both hands to the right, twist the trunk to the right, and turn the head to the right. The left leg is straight and relaxed and the left heel is off the floor. The trunk is inclined forward. (Fig. 3)

On *Two!* throw with the right hand, twisting the trunk sharply to the left. The left knee is bent and the right knee is straight with the heel off the floor. Notice that the body forms a straight line from head to right heel. (Fig. 4) The weight has been transferred to the left leg. The right arm is forward and the left arm back. (Fig. 4) The force of the throw turns the body in Fig. 4 a greater distance than in Fig. 3, and so the left foot is turned in the direction of the throw.

GUIDES IN PERFORMANCE

1. Avoid angles and sharp tensions in the movement.
2. Make all movements flowing, smooth and harmonious.
3. Avoid conscious contractions. Do not try to contract the muscles. Perform the movement and the muscles will contract to carry out your desires.
4. Repeat the exercise ten times. At first separate it into two parts. After it is learned make it continuous and change from the position in Fig. 3 to that in Fig. 4 and back to the position in Fig. 3 without interruption.
5. After strength and power are developed, the movement may be performed rhythmically 20 times.

COMMAND

1. *Ready for Throwing—Stand!* (Stand with feet about 24 inches apart and with the left foot about 6 inches in front of the right.)
2. *Throwing—One! Two!*
3. To command the rhythmical throwing, set the rhythm that is desired. Then command, *Throwing in Rhythm—Begin!* Count 1, 2, 1, 2, to mark the rhythm.
4. To halt the group, command, *Class—Halt!* inserted in the series of 1, 2.
5. *Class—Stand!* Standing position as given in Standing exercise is taken.

FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

FIG. 8

Lifting (Figs. 5, 6 and 7)

This is a natural movement used in lifting an object from one side of the body to the other, or from a low level to a higher one. It is an exercise of the back and legs and may be made very vigorous by reaching low and lifting high.

The movement as given has two phases: low lifting and high lifting.

Exercise of Low Lifting

On command *One!* bend the right knee and reach with arms to the right of the right foot about 12 inches from the floor. (Fig. 5) The left leg is straight, the back is flat, and the movement occurs in the hip and knee joints. On *Two!* transfer the weight to the left foot and lift the object secured in command *One!* to the left and into the same relative position as in Fig. 5. Then the left knee will be bent, the right leg straight, and the arms will be to the left of the left foot about twelve inches from the floor.

Exercise of High Lifting

On *One!* assume the position as shown in Fig. 6. The hands reach the floor and there is greater bending in the right knee and hip joints. The back remains flat and the left leg is essentially in the same position as shown in Fig. 5.

On *Two!* lift the object to the left and place it high above the head. (Fig. 7) Vigorous muscular extension should occur in this part of the movement while the weight is being shifted to the left foot and the right leg is relaxed with the right heel off the ground.

Guides in Performance

1. Avoid tenseness in the movement, seek smoothness and constantly adjust the body in the different parts of the exercise by comparing the movement with the illustration.
2. Secure uplift of the body in the high lifting and get the complete extension that would come in placing a box on a high shelf. (In Fig. 7, the upward pull of the trunk is indicated in the vertical folds of the shirt.)
3. Repeat ten times with each lift.

Command

1. *Ready for Lifting—Stand!* (Stand with feet 24 to 28 inches apart, parallel and with the weight disposed to their outer edges.)
2. *Low Lifting—One! Two!*
3. *High Lifting—One! Two!* Start the high lifting part of the time on the left and part of the time on the right.

Climbing (Figs. 1 and 8)

Climbing has always played a prominent part in the history of man. Our arboreal ancestors excelled in it and our children to-day at an early age seek to recapitulate their racial history in the same action. This movement is a powerful exercise for the legs and secures strong contraction of the abdominal muscles. As shown in Fig. 8, it represents reaching upward and grasping an object, as a limb of a tree or ladder rung and pulling up one leg to obtain support preparatory to pushing up the body. The arm movement is identical with the Stretching exercise.

Exercise

On *One!* reach upward with the arms, raise the right knee forward and push the body upward on the ball of the left foot. Secure vigorous stretching upward. This is to be the accented part of the movement. (Fig. 8) On *Two!* return to standing position. (Fig. 1)

Guides in Performance

1. Be careful not to droop on *Two!* Keep the erect position as shown in Fig. 1.
2. Accent the count *One!*
3. The movement may be performed rhythmically but the rhythm should be slow and the accent always on the upward movement.

Command

1. *Ready for Climbing—Stand!* (Fig. 1)
2. *Climbing—One!* (Fig. 8) *Two!* (Fig. 1)

Walking (Figs. 1 and 9)

The walking movement represents a natural exercise performed with movement of the opposite arm and leg. The act should be executed with the feet parallel and with the weight on their outer edges. The illustration (Fig. 9) exaggerates the natural movement in some of its phases, but should be practised as shown (Fig. 9) to secure the freedom in walking that is desired. Walking can be something more than a means of progression. Smooth arm movement and vigorous leg action will bring exhilaration into an act that is frequently rendered difficult by improper habits and clothing.

EXERCISE

On *One!* raise the left knee forward and swing the right arm forward. The body remains poised on the ball of the right foot. (Fig. 9) On *Two!* reverse the position of arms and legs.

GUIDES IN PERFORMANCE

1. Keep the accent upward.
2. In walking avoid the pounding of the heels on the floor. The heels strike first always, but the accent of the movement should be upward and forward, never downward.
3. This movement is not to be confused with the aimless strolling that is seen so frequently.
4. The rhythmical and continuous walk is used as soon as the idea of the arm and leg movement is comprehended.

COMMAND

1. *Ready for Walking—Stand!* (Fig. 1)
2. *Walking—One!* (Fig. 9) *Two!* (Fig. 9)
3. *Walking in Rhythm—Begin!* See directions for commanding a rhythmical exercise in Throwing.

RUNNING (Figs. 1 and 10)

This is a natural exercise performed on the balls of the feet with vigorous thrusting upward of the knees and free and vigorous swinging of the arms. (Fig. 10) It will be noticed that the right arm is forward when the left knee is forward. This opposition in walking and running is a fundamental compensation in the movement of the body to secure proper balance, direction and control. This exercise vigorously stimulates the circulatory and respiratory systems, and will aid in improving all the functions of the organs supplying the body with energy. It should be possible for one to run and enjoy the movement. (Fig. 10)

EXERCISE

On *One!* swing the right arm forward and thrust the left knee upward and forward at the same time pushing the body upward on the ball of the right foot.

On *Two!* reverse the position of the arms and legs and push the body up on the ball of the left foot.

GUIDES IN PERFORMANCE

1. Run a few times at first. After power and endurance are developed, the run should be continued for several minutes.

2. Accent the upward movement. Do not strike the floor hard on the down stroke.

3. After the coördination is learned, the run should be executed in rhythm.

COMMAND

1. *Ready for Running—Stand!* (Fig. 1)

2. *Running—One!* (Fig. 10) *Two!* (Fig. 10)

3. *Running in Rhythm—Begin!* See directions for rhythmical movements in Throwing.

JUMPING (Figs. 11 and 12)

To clear an obstacle or grasp an object above one's standing reach, one resorts to jumping. This is therefore a natural movement and it should be performed naturally. The first part of the movement (Fig. 11) uses the muscles of the entire body, and in the second part (Fig. 12) the body is thrown into the air by the vigorous contraction of leg, back and arm muscles. In the continuous jump, the landing position, shown in Fig. 11, serves as the start for the next jump. At first the movement should be practised without the jump.

EXERCISE

On *One!* bend the knee and hip joints and incline the body forward. (Fig. 11) Swing the arms downward and backward elevating the heels slightly. Note that the trunk is inclined and not held in the upright and unnatural position sought in some gymnastic systems. On *Two!* swing arms forward and upward, and spring into the air. (Fig. 12) The landing follows as a result of the movement and should assume the position shown in Fig. 11.

GUIDES IN PERFORMANCE

1. Before trying the jump, the movement of preparation (Fig. 11) should be practised until the muscles are strong enough to jump without straining them.

2. At first, only make one jump (Fig. 12). Land with the knees bent and the heels off the ground.

3. Secure lightness in the movement and avoid landing heavily.

4. After the strength of the legs has been developed, continuous jumping should be performed. Gradually increase the number of jumps from one to five or six.

FIG. 9

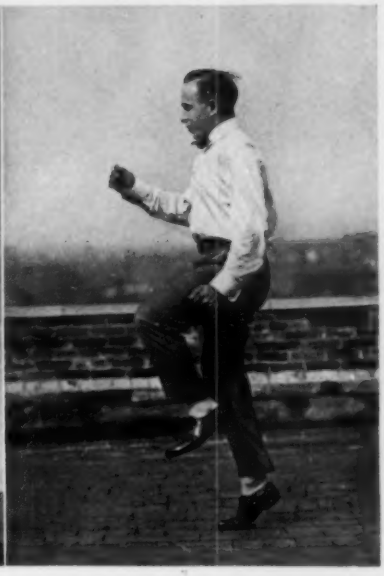

FIG. 10

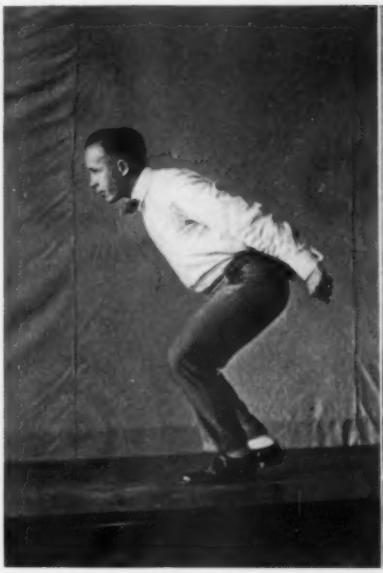

FIG. 11

FIG. 12

COMMAND

1. *Preparation for Jumping—One!* (Fig. 11) *Two!* (Fig. 1) This movement should be performed six to ten times each day until the muscles are strong enough to make the jump.

2. *Jumping—One!* (Fig. 11) *Two!* (Fig. 12) *Three!* (Fig. 1) On completing the jump, the body assumes the position shown in Fig. 11 and then comes into the standing position shown in Fig. 1.

3. *Jumping in Series—One!* (Fig. 11) *Jump!* (Fig. 12) *Jump! Jump!*

The command *Jump!* is used as soon as the landing is made and is repeated as often as desired. At first not more than two jumps in series should be made; later a series of six and in some cases more may be used.

MEASURING THE HORACE MANN ELEMENTARY SCHOOL

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The Horace Mann Elementary School has been the model observation school for thousands of leading teachers and educational administrators; it has a corps of highly trained teachers guided by some of the best educational experts of our day; it is universally recognized as one of the best schools of its kind in this country. Hence the writer believes that a large number of educators will be interested to know its achievement in the standard educational tests and to make a comparison of their own schools with it. This article presents a summary of the results secured from the application of such standard tests. These measurements were made by advanced students of Teachers College under the supervision of the writer and Professor Bonser and at the request and with the coöperation of Professor Pearson and his teachers. Chief credit is due to the numerous students who shared the more laborious part of the investigation.

A few introductory paragraphs precede the summary.

While still a child the writer blundered upon the essential principles underlying the two present-day methods of measuring education. Some miners were attempting to lift a derailed car. A lever and fulcrum were brought but the lever broke. A stronger lever was secured, but the fulcrum was too far from the car. Finally the proper adjustments were made and the car was lifted. In a vague way he perceived that whether or not the car was lifted could be determined in two ways: (1) By measuring the length of the lever, the resistance of the fulcrum and the ground under the fulcrum, the weight of the men, the point of application of their weight, the distance of this point to the fulcrum, the distance from the fulcrum to the car, the weight of the car; or (2) simply by determining whether the car was actually lifted. If not pushed too far this is a crude illustration of the two ways education is now being measured.

It is a fair assumption that the crucial purpose of elementary education is to make certain changes in children. To this end we have surrounded them with levers and fulcra in the shape of books, pictures, maps, tools, playthings, pedagogical methods, and with teachers who will utilize these instruments as leverages to produce the desired changes.

Again it is a fair assumption that the schools should know whether their levers, fulcra, etc., are really producing the changes desired. As in the case of the derailed car, there are two methods of measuring these changes: (1) Strength of lever, length of leverage, etc., become the number and nature of the books in the libraries, map facilities, blackboard space, and such, and the weight of the men becomes the number of diplomas possessed by the teacher or else the amount of her skill in making provision for motive and initiative on the part of the pupil. (2) Whether the car is actually lifted is comparable to measuring directly the changes in the pupils.

Doubtless our relatively primitive ancestors held conferences to discuss the advisability of such and such arrangements of lever and fulcrum in lifting a weight. Of course such possible discussions never were and never could be settled until the crucial measurement—the *direct* measurement—was made. It would be of inestimable value to know whether the presence of certain books in the schoolroom or the possession of a certain amount of professional training on the part of the teacher and the like are prerequisites of certain defined changes in pupils. Without such *ancillary* measurement by teachers and supervisors, the conditions for pupils' growth cannot be arranged in advance with certainty. But we shall not arrive at such knowledge except through direct measurement. We certainly cannot claim to know the exact causal relation between defined changes in pupils and most of the paraphernalia with which the pupil is now surrounded. In spite of this, however, the chief method of supervision is to attempt to judge the presence or absence or amount of presence of these levers and fulcra.

Direct educational measurement in the Horace Mann School has passed and is still passing through an evolution. The first stage consisted of observations and examinations made by the teachers, the whole culminating in a percentage or other form

of teacher's mark. This method overlaps subsequent methods because some of its advantages are still unequaled. But the method of teacher's marks sacrificed comparability. Methods of testing and marking were relative to the grade and peculiar to the teacher. The best person in the eighth grade received the same mark as the best person in the second grade, indicating thereby that either one of the supposedly best schools in the United States was making no change whatever in its pupils or else this method was unsatisfactory for measuring changes in pupils.

The second stage is represented by the introduction of standardized educational tests, which were so constructed as to make comparisons possible from child to child, class to class, grade to grade, and from school to school. Most of the measurement during this stage was done under the supervision of Dr. Milo B. Hillegas, Dr. Frederick G. Bonser, and the writer.

Realizing both the defects and the promise of these measurements, Professors Bonser and McMurry and others recommended the establishment of courses whose single purpose should be to train students for measurement and experimentation in elementary education. Professor Pearson has invited the students in these courses to coöperate with him and his teachers in an annual measurement of the achievement and improvement in the Horace Mann Elementary School by means of standardized tests, as well as in experimentation with methods of instruction, or some other phase of elementary education. The present arrangement makes possible the close supervision, systematic cycle of measurement and continuity needed to secure the maximum benefit to instruction.

The general plan for this annual survey is somewhat as follows: The measurable subjects have been divided into convenient and so far as possible psychological units. Each year there will be a concentrated study of just one unit, accompanied by a formulation and a practical tryout of methods of improving instruction in that unit. The responsibility for the initiation of new methods and practical experimentation with them rests with the teachers. The following year another unit will be emphasized and attended with practical experimentation and in addition there will be scientifically controlled experimentation with the most promising

methods initiated during the previous year. After a few years there will be a return to the first unit and the cycle will be gone through again.

Last year the unit for study was Fundamentals of Arithmetic; this year it is Reading and some of its psychological elements. The remainder of this article will be devoted to a summary of the condition of the Horace Mann School as revealed by standard tests of arithmetic. Since this circular plan of measurement had not been fully adopted last year, other units such as Reasoning in Arithmetic, Reading, Composition, Penmanship and Spelling came in for incidental study. No report will be made at this time except upon arithmetic. The following tests of arithmetic were used:

Courtis Fundamentals of Arithmetic Test, Series B.

Form 1 was given in November and Form 2 in April. The tests, with method of administration, can be purchased from Mr. S. A. Courtis, 82 Eliot Street, Detroit, Mich.

Woody Fundamentals of Arithmetic Scales, Series B.

The same four scales were used in November and April. The method of administration will be found in Dr. Clifford Woody's *Measurements of Some Achievements in Arithmetic.* This monograph and the scales may be secured from the Teachers College Bureau of Publications.

Woody-McCall Mixed Fundamentals Test.[1]

Is the score made in the Courtis or Woody test an accurate measurement of a pupil's facility in a concrete situation? Purchased postage stamps do not instruct the child to add or to subtract. They tell the child that he must choose whether he will add, subtract, multiply, or divide. In the previously mentioned tests the processes are neatly separated on different sheets. In life they are 'all mixed up'. Furthermore, life often requires rapid shifts from one to the other. The writer has attempted to partially bridge this possible chasm between test method and life method. The four Woody Scales, Series B, were each split into

[1] An elaborate investigation by Professor G. M. Whipple and Miss G. L. Coy proves this test to be fourth in value out of twenty-six group tests, for the selection of exceptionally gifted pupils.

two halves in such a way that one-half was approximately equal to the other half, and each half began easy and grew progressively more difficult. An addition, a subtraction, a multiplication and a division half were taken and thoroughly mingled to make one test, while the remaining halves were similarly mingled. A word or symbol indicated the process for each example. The total amount of time on these two tests was exactly equal to the total time allowed for the four original scales. In scoring, the four fundamentals were separated so comparisons with the original scales could be made. So far as possible the method of administration was like that used with the Woody Scales. A sample of the tests may be secured from the writer.

Stone Reasoning Test in Arithmetic.

One examiner gave this test in January, 1917, according to the directions published in *Reasoning Tests in Arithmetic* by Dr. C. W. Stone. This as well as the tests may be secured from the Teachers College Bureau of Publications.

The above tests were given to every class in all grades tested. The score for any grade is the average of the median scores of all the classes in that grade. It was convenience and not superior merit which caused the adoption of this method of determining grade scores. Additional information is given in the tables of results which follow.

Curves of grade progress for *attempts* for any one fundamental would be above the standard curve in the earlier grades, and below it in the upper grades. It would be a scissor-like arrangement with the crossing between the fifth and sixth grades. Most striking of all is the fact that there is actual retrogression in the upper grades, both relatively and absolutely. The retrogression is doubtless caused in part by the teaching of informal algebra and geometry in Grades VII and VIII and by the consequent neglect of the fundamentals. There is some evidence that the more sophisticated advanced pupils did not coöperate so enthusiastically with the examiner. There would be no retrogression in the accuracy curves, but there would be the same crossing of curves between the fourth and fifth grades.

TABLE I

COURTIS ARITHMETIC TESTS, SERIES B

	Addition			*Subtraction*			*Multiplication*			*Division*		
	Att.	*Rts.*	*Acc.*	*Att.*	*Rts.*	*Acc.*	*Att.*	*Rts.*	*Acc.*	*Att.*	*Rts.*	*Acc.*
IV												
H. M. S., November, 1916	6.6	4.4	66%	7.2	5.4	75%	5.2	3.6	69%	3.9	1.9	49%
H. M. S., April, 1917	8.3	5.3	64%	9.3	8.1	87%	6.6	5.0	76%	6.2	4.5	72%
General, April, 1916	7.4		64%	7.4		80%	6.2		67%	4.6		57%
V												
H. M. S., November, 1916	8.0	4.8	60%	8.5	6.9	81%	7.0	4.5	64%	6.3	3.5	55%
H. M. S., April, 1917	9.0	5.9	65%	9.9	7.5	75%	7.1	5.0	70%	7.4	6.3	85%
General, April, 1916	8.6		70%	9.0		83%	7.5		75%	6.1		77%
VI												
H. M. S., November, 1916	7.6	5.1	67%	8.5	6.4	75%	6.3	4.4	69%	7.0	5.0	71%
H. M. S., April, 1917	8.2	5.4	66%	10.7	7.8	73%	7.4	5.1	69%	7.4	6.5	88%
General, April, 1916	9.8		73%	10.3		85%	9.1		78%	8.2		87%
VII												
H. M. S., November, 1916	6.6	4.7	71%	6.3	5.5	87%	5.9	4.2	71%	6.6	5.4	82%
H. M. S., April, 1917	6.9	4.5	65%	10.4	8.6	82%	5.1	3.2	63%	4.8	4.3	88%
General, April, 1916	10.9		75%	11.6		86%	10.2		80%	9.6		90%
VIII												
H. M. S., November, 1916	8.5	6.1	71%	6.1	5.0	82%	6.8	5.1	75%	7.9	6.7	85%
H. M. S., April, 1917	8.9	5.8	65%	8.9	6.7	75%	6.6	4.7	71%	7.9	6.9	87%
General, April, 1916	11.6		76%	12.9		87%	11.5		81%	10.7		91%

TABLE II

ARITHMETIC—FUNDAMENTAL OPERATIONS, COURTIS TEST

	Horace Mann School			*General Results of All Schools*	
	November 1915	*May 1916*	*November 1916*	*April 1917*	*April 1916*
Grade IV					
Speed	5.07	5.77	5.7	7.6	6.4
Accuracy	55.7%	70%	62%	72.5%	67%
Grade V					
Speed	6.9	8.3	7.45	8.35	7.8
Accuracy	78%	80%	64.5%	74%	76%
Grade VI					
Speed	5.17	8.25	7.35	7.67	9.35
Accuracy	53%	73%	68%	70%	81%
Grade VII (I High School, Girls)					
Speed	7.5	7.77	7.17	6.69	10.6
Accuracy	84%	80%	78%	73%	83%
Grade VIII (II High School, Girls)					
Speed	8.27	8.47	8.09	8.2	11.7
Accuracy	64%	82%	78.5%	74%	84%

Table II is the unweighted average of the scores in each fundamental. Its purpose is to show a comparison of results from two successive years. Last year the school was neither better nor worse than it was the previous year. The school has not been standing still, of course, for the school population is a moving one where the untrained take the place of the trained.

Table III shows that all grades considered, there is little difference between the results from the Woody and the Woody-McCall Mixed Fundamentals Tests.

The Woody standards lack the recency and accuracy of the Courtis, yet when Horace Mann is compared with them we see the same general picture, the same superiority of the school in the lower grades coupled with the same inferiority in the upper

grades, thus giving the same scissor-like appearance to curves of grade progress. We saw in the Courtis how these curves crossed each other between the fifth and sixth grades. In the Woody test the chiasm occurs a year later.

TABLE III

WOODY ARITHMETIC SCALE

	III	*IV*	*V*	*VI*	*VII*	*VIII*
Fundamentals—Series B						
Addition						
November, 1916	9.0	12.7	14.5	15.8	16.1	16.5
April, 1917	12.4	14.1	14.9	16.9	16.6	17.5
Subtraction						
November, 1916	8.0	9.6	10.5	12.4	12.8	12.6
April, 1917	9.5	10.6	13.0	13.0	13.7	14.2
Multiplication						
November, 1916	5.9	11.2	12.1	15.1	15.6	15.3
April, 1917	9.7	12.7	12.7	16.4	16.6	17.0
Division						
November, 1916	4.1	6.2	8.9	11.0	12.2	11.8
April, 1917	6.3	10.0	9.4	12.5	11.8	12.9
Mixed Fundamentals, April, 1917						
Addition		13.1	15.2	16.8	16.8	17.2
Subtraction		10.1	12.1	13.0	13.3	14.2
Multiplication		12.6	14.5	15.8	16.2	17.1
Division		9.9	11.4	12.3	12.3	13.0
Fundamentals—Standards						
Addition	9	11	14	16	18	18.5
Subtraction	6	8	10	12	13	14.5
Multiplication	3.5	7	11	15	17	18
Division	3	5	7	10	13	14

Table IV, on page 480, shows that Horace Mann is considerably ahead of Butte, and it would doubtless have exceeded the average of the twenty-six cities had the eighth grade been tested as was done in these cities.

To sum up, the Horace Mann Elementary School is an average school in the fundamentals of arithmetic, and if it be judged by the final product it is slightly below the average school. In reasoning in arithmetic it is somewhat above the average. Per-

TABLE IV

STONE'S REASONING TEST—ARITHMETIC
GRADE MEDIANS

	V	*VI*	*VII*
Horace Mann	4.1	6.2	6.7
Butte, Montana	2.2	3.9	5.8

SCORE PER 100 PUPILS FOR ALL GRADES[1] COMPARED WITH 26 OTHER SCHOOL SYSTEMS

	Horace Mann School	*Lowest School*	*Middle School*	*Highest School*
Reasoning	578	356	551	914
Accuracy	64%	55%	72%	86%

haps this contrast in results between the formal fundamentals and reasoning justifies the final conclusion that the Horace Mann pupils are educated in arithmetic but not drilled. Does this mean that direct measurement runs counter to the prevailing opinion regarding this school's excellence? An answer to this question cannot be given without taking three points into consideration:

1. The school population is a very transient one, and to some extent we have measured what other schools have done.

2. We may have measured not what the school could do in the fundamentals but what it chose to do. It may have, and as a matter of fact it has, chosen to emphasize the less formal aspects of education. It is possible that to be an average school in these fundamentals is to stress them unduly. The greatest problem before educational measurement is not only to fix the school's aim but to determine the amount of these aims as well. All of which means that we must withhold an answer to the question propounded above, at least until other units of the school's work have been measured.

The prime purpose has been to measure the school by means of tests, but a no inconsiderable aim of the writer has been to measure the tests by means of the school. So let us turn to a criticism of the measuring instruments employed.

[1] In Horace Mann, the fifth, sixth, and seventh grades only were tested, while in the twenty-six other systems, the eighth grade was included.

The reliability of a test is an important criterion for judging its worth. No matter how excellent a test may be in other respects, if it lacks a substantial reliability it is useless. The customary method of determining such reliability is to give a test twice to the same pupils in close succession, or to give a test and a duplicate of it in close succession, and then to calculate the correlation between the two. Courtis Series B Form 1 was given twice by the same examiners. The writer made up four tests which, so far as he could judge, duplicated the same processes and difficulties of the four Woody scales. These were given to the same pupils by the same examiners shortly after the first tests were given. Two of the writer's students, Miss Abigail Johnson and Mr. G. C. Stockton, calculated the reliability coefficients. Tables V and VI give these coefficients for the Courtis and Woody tests respectively. These coefficients are based upon about sixty pupils in each of Grades 4, 5, and 6, and about forty-five girls in each of Grades 7 and 8.

TABLE V

PEARSON RELIABILITY COEFFICIENTS OF CORRELATION FROM TWO SUCCESSIVE TESTS WITH COURTIS ARITHMETIC TESTS, SERIES B

	Addition		*Subtraction*		*Multiplication*		*Division*		*Average*		*Total*
	Atts.	*Rts.*	*Atts.*	*Rts.*	*Atts.*	*Rts.*	*Atts.*	*Rts.*	*Atts.*	*Rts.*	*Av.*
IV	.64	.63	.66	.79	.76	.84	.49	.48	.64	.69	.67
V	.81	.75	.73	.63	.91	.49	.81	.75	.82	.66	.74
VI	.85	.75	.87	.81	.83	.64	.83	.75	.85	.74	.80
VII	.55	.59	.79	.78	.71	.59	.54	.46	.65	.61	.63
VIII	.85	.81	.67	.62	.73	.74	.70	.57	.74	.69	.72
Average	*.74*	*.71*	*.74*	*.73*	*.79*	*.66*	*.67*	*.60*	*.74*	*.68*	*.71*

Table V makes four points: (1) The reliability of each of the four fundamentals is approximately equal. Division is slightly below the other three. (2) *Attempts* have a reliability superior to *rights*. This is true for each fundamental. The superiority is, however, very slight. (3) There is no tendency for reliability to increase or decrease upward through the grades. The average reliability is highest in the fifth grade. (4) The reliability coefficient for the Courtis test, under the conditions of this in-

vestigation, is approximately .7. Sometimes it is higher and sometimes it is lower. We have not calculated the reliability of *accuracy*, which is a resultant of *attempts* and *rights*.

TABLE VI

PEARSON RELIABILITY COEFFICIENTS OF CORRELATION FROM TWO SUCCESSIVE TESTS WITH THE WOODY ARITHMETIC SCALES, SERIES B, AND THE WOODY-MCCALL DUPLICATES

	Addition	*Subtraction*	*Multiplication*	*Division*	*Average*
III	.52	.43	.64	.72	.58
IV	.43	.60	.27	.53	.46
V	.71	.51	.78	.79	.70
VI	.73	.60	.59	.50	.61
VII	.42	.53	.45	.42	.46
VIII	.42	.32	.50	.48	.43
Average	*.54*	*.54*	*.54*	*.57*	*.54*

Table VI makes four points: (1) The reliability for each fundamental is, like the Courtis tests, approximately equal. (2) Like the Courtis tests there is no tendency for reliability to increase or decrease upward through the grades. Like the Courtis tests again, the average reliability is highest in the fifth grade. (3) The variation in the size of the reliability coefficients for the Woody tests is slightly greater than for Courtis. It is not only important that reliability be high but that it be constant. (4) The reliability of the Woody tests may be taken as approximately .55, which is about .2 lower than the Courtis. For this reason, we suggest that whenever scores for individual pupils are to be studied, Woody's longer Series A scales be preferred to Series B. Series B has a satisfactory reliability for class scores only.

Miss Grace Atchinson has further utilized the data from this investigation to study the extent to which pupil performance in one arithmetic test corresponds to that same pupil's performance in another arithmetic test or a composite of several tests. Her results are given in Tables VII, VIII and IX.

TABLE VII

PEARSON RAW AND CORRECTED COEFFICIENTS OF CORRELATION BETWEEN COURTIS' FOUR TESTS OF FUNDAMENTALS, SERIES B (RIGHTS)

	AS	*AM*	*AD*	*SM*	*SD*	*MD*	*Average*	*Corr. Av.*
IV	.45	.50		.46			.47	.68
V	.64	.42	.52	.32	.63	.30	.47	.71
VI	.55	.56	.36	.56	.55	.43	.50	.68
VII	.51	.33	.09	.04	.20	.61	.26	.43
VIII	.54	.55	.60	.58	.52	.48	.55	.80
Average	*.54*	*.47*	*.39*	*.39*	*.48*	*.46*	*.45*	*.66*

Addition with all others—Average	.47
Subtraction with all others—Average	.47
Multiplication with all others—Average	.44
Division with all others—Average	.44

TABLE VIII

PEARSON RAW AND CORRECTED COEFFICIENTS OF CORRELATION BETWEEN WOODY'S FOUR TESTS OF FUNDAMENTALS (SERIES B)

	AS	*AM*	*AD*	*SM*	*SD*	*MD*	*Average*	*Corr. Av.*
III	.63	.44	.43	.51	.53	.60	.52	.90
IV	.42	.32	.22	.19	.18	.47	.30	.65
V	.15	.07	.25	.08	.11	.20	.11	.16
VI	.42	.40	.46	.23	.26	.48	.38	.62
VII	.26	.17	.05	.29	.42	.31	.25	.54
VIII	.26	.45	.26	.02	—.05	.26	.20	.46
Average	*.36*	*.31*	*.28*	*.22*	*.24*	*.39*	*.29*	*.56*

Addition with all others—Average	.32
Subtraction with all others—Average	.27
Multiplication with all others—Average	.31
Division with all others—Average	.30

In brief, Tables VII and VIII tell the following story, which holds true for both the Courtis and the Woody tests of fundamentals: (1) The correlation is about equally close between any two tests and any other two. (2) The correlations between tests in one grade appear to be no closer than in any other grade. There is a slight tendency for the third-grade correlations to be highest, possibly because these tests measure intelligence in the lower grades to a greater extent than they do in the upper grades.

(3) If an examiner had to choose pupils for their ability in the four fundamentals any one of these tests would be as good as any other. (4) On the whole, the correlation between Courtis tests is closer than between Woody tests. The approximate corrected coefficients in the extreme right column show that this is not entirely due to the higher reliability of the Courtis tests. (4) The true correlation between ability in one fundamental and another is probably about .60 for the elementary school, since it is .66 in the case of the Courtis tests and .56 in the case of the Woody tests. A pressing practical question just now is: Shall the pupils in the elementary school be classified for instruction on the basis of school subjects or on the basis of intelligence? In deciding this question numerous factors must receive consideration, and one is the closeness of correlation between the subject matter grouped together into a single subject. It is conceivable that ability in addition is no more closely related to ability in subtraction than it is to ability in reading. Just because we have lumped several items together and have given the group a single name does not increase the psychological kinship. Classification by subject matter may ultimately require that present subjects be very much subdivided. It would not be very difficult to show that present grouping does not always have a psychological basis.

Table IX may well be left to tell its own story concerning variation of correlation with test and with grade.

TABLE IX

PEARSON RAW COEFFICIENTS OF CORRELATION BETWEEN WOODY'S FOUR FUNDAMENTALS TESTS AND A COMPOSITE OF THE FOUR

	AC	*SC*	*MC*	*DC*	*Average*
III	.76	.86	.77	.74	.78
IV	.55	.60	.46	.47	.52
V	.44	.60	.61	.64	.57
VI	.67	.67	.57	.68	.65
VII	.61	.73	.56	.67	.64
VIII	.77	.51	.64	.61	.63
Average	*.65*	*.66*	*.60*	*.64*	*.63*

COLLEGE NEWS AND DEPARTMENTAL NOTES

DEAN RUSSELL ORGANIZES RECONSTRUCTION WORK IN THE ARMY

At the request of the Surgeon General of the United States Army the Trustees of Teachers College in May granted Dean Russell leave of absence to act as civilian director for several months of the Department of Education of the Division of Physical Reconstruction in the office of the Surgeon General at Washington. The task which Dean Russell was asked to undertake was the organization of a program of educational work for the rehabilitation of disabled soldiers in the reconstruction hospitals of the United States.

During the summer Dean Russell succeeded in having his plans for educational reconstruction fully approved by the General Staff of the Army. As a result, this new work is already fully started in a number of the reconstruction hospitals and is rapidly being installed in each of the others. The scope of this work can best be understood by summarizing its present status in the reconstruction hospitals.

There are at present in the United States about eighteen hospitals which have as their main purpose the work of physical reconstruction. In each of these hospitals there has been organized an educational department in coöperation with the medical and surgical departments of the hospital. The edúcational department is directed by a commissioned officer usually of the rank of major or captain.. There is a minimum of four other commissioned officers assigned to the educational work of each hospital, these officers having charge of the entire teaching staff of the educational department. The teaching staff numbers approximately one teacher to every twenty patients.

The course of study in the educational department of the hospital includes instruction in academic subjects of elementary

and high school grade, in industrial and trade subjects, in agriculture, in commercial subjects, and in recreation and physical training. There is also included in the educational department a psychological and statistical staff.

The following statement from a recent publication of the Surgeon General gives the aims of this educational work:

"Physical Reconstruction is the complete medical and surgical treatment carried to the point of maximum restoration, both mental and physical." It is further noted that "modern medical treatment does not end with physical cure. Functional restoration is the final aim of modern physicians and surgeons and it is conceded that the physical rehabilitation of disabled men is peculiarly dependent upon their mental attitude. The more serious the disability the greater the danger of mental depression and an indisposition to respond to medical and surgical treatment. The educational work should begin, therefore, at the moment when the man has arrived at the stage where he begins to worry about his future. The first problem is to divert his attention by simple recreation, through reading, pictures, games, handiwork occupations, and the like, with a view to securing a genuine interest in the attainment of some worthy end —the end most certain to hold this attention and to claim his best efforts in his future vocation. Hence, by gradual steps he may be induced to supplement his previous vocational experience by academic, scientific, or technical instruction, or to choose a new vocation and begin preparation for it if such a course is necessary." By this definition the educational service in the hospital is placed distinctly upon the plane of the other professional services, and should be so regarded by all having to do with the physical reconstruction program.

As provided by Dean Russell's plan of organization a total of one hundred and nineteen commissioned officers has already been authorized for the eighteen reconstruction hospitals in addition to the teaching staff necessary to carry on this work. The majority of the reconstruction hospitals have accommodations for one thousand patients and upward. Assuming that by next June there will be a total of twenty thousand patients in the reconstruction hospitals, the educational program provided for these men will require one thousand teachers.

The above plan for educational reconstruction is the first of its kind in the history of the world to be incorporated in military hospitals as an integral part of the army program. Heretofore the sole object of the hospital has been to get men

physically well without any consideration of their mental needs or of preparing them acceptably to reënter civil life. Under the present arrangements it is the aim to commence in the hospital to fit each man educationally and vocationally for effective work in civil life after he leaves the hospital.

It is the above program which Dean Russell has organized, perfected, and had approved by the General Staff while acting as director of the Division of Education.

Dean Russell has also brought about a close coöperation between the educational work of the hospital and that of the Federal Board for Vocational Education, which has as its purpose the vocational training of disabled soldiers after they are discharged from the hospital. The Federal Board for Vocational Education in coöperation with the Surgeon General's Office is now working out a full course of study in each subject which will be suitable for use in the educational department of the hospitals and afterwards in other schools which will continue the vocational training of each soldier.

Colonel Frank Billings, head of the Division of Physical Reconstruction, sent the following letter of appreciation to the Trustees of the University concerning the work of Dean Russell:

War Department
Office of the Surgeon General
Washington

August 26, 1918

The President of the Board of Trustees,
Columbia University, New York

My Dear Sir:

As you are aware, Dean James E. Russell of Teachers College, Columbia University, was invited by the Surgeon General to become the Director of the Educational Department of the Division of Physical Reconstruction in this office. In April Dean Russell responded to the invitation by volunteering a part-time service. He stated that he could not accept, because of health and other matters, but agreed to give such time as was possible in the organization of the Educational Department of the office. Since that time Dean Russell has spent nearly half of his time in the office of the Surgeon General and at some of the hospitals where disabled soldiers are cared for. Under his guidance an Educational Department has finally been organized to administer the education and training of the

disabled soldiers. This implies an administrative force in the office of the Surgeon General and a like personnel in every General Hospital which functions in physical reconstruction of disabled men. The standard set in the education of the men is high and ideal, and because of this high standardization of the educational plans, the education and training of the disabled soldiers as a part of their cure will be, it is believed, efficient and beneficial to the soldiers and to the whole country.

This patriotic volunteer service of Dean Russell has not only been of the greatest assistance and value to the Medical Department of the Army, but it is my belief that had it not been for his services it would have been difficult to have organized an efficient educational department.

The Surgeon General desires me to thank you, and through you your Board of Trustees, for this valuable service of Dean Russell, to which I desire to add my own personal thanks.

Although Dean Russell has given much to the Medical Department of the Army, it is to be hoped that the Trustees of Columbia University will sanction his continued service in an advisory capacity, with such moderate time as may be at his disposal and, of course, without detriment to his duties at Teachers College.

Very truly yours,

FRANK BILLINGS,
Colonel, Medical Corps, U. S. A.

On October 1 Dean Russell returned to his duties at Teachers College having completed the work of organization which he had undertaken. Dr. Lotus D. Coffman, dean of the School of Education of the University of Minnesota, succeeds Dean Russell as director of this work in Washington.

FIRST-AID OFFICERS FOR THE NAVY TRAINED AT TEACHERS COLLEGE

Under the direction of Professor Bigelow, the School of Practical Arts of Teachers College has just completed a four-weeks' training course for first-aid officers of the Navy. A detachment of one hundred and four men of the Naval Hospital Corps under the general control of the commanding officer of the Brooklyn Naval Hospital was assigned to the College for this special training. The course prescribed by the commanding officer

included the following subjects: anatomy and physiology, hygiene, bacteriology, chemistry, nursing, massage, first-aid and naval surgery, cookery and dietetics, and clerical duties. The instruction was provided by the Teachers College staff supplemented by medical and surgical men from the outside.

Preparatory to entering the course the men had had five or six weeks' general naval training at the Great Lakes Training Station. For further training they have now been assigned as assistants to nurses and orderlies in various naval and general hospitals. When their apprentice training in these hospitals has been completed, they are to be assigned either as first-aid officers on small ships that do not carry regular doctors, or as nurses in the transport service.

The work done at Teachers College was, from the naval point of view, an experiment, being the first course of its kind ever offered. It is the hope of the commanding officer initiating the experiment that these men, because of the specialized training received in Teachers College, will prove much more efficient as first-aid officers and that in consequence of this greater effectiveness he will be in position to support a recommendation to the Navy Department that additional similar courses be authorized at this and other like institutions throughout the country. The services of the College, including the instructional staff both regular and supplementary, were rendered gratis.

SPEYER SCHOOL TAKEN OVER BY THE ARMY

The experimental junior high school which has been conducted jointly by Teachers College and the City of New York for the past three years in the Speyer School building has been closed. The United States Army has taken over the building and is now using it as a barracks for two hundred students of the Student Army Training Corps.

Three groups of students, however, had completed the work of the junior high school and were transferred to the city high schools. A report of the experiment, which was in charge of Professor Briggs and Dr. Joseph K. Van Denburg, is being prepared and will be published later.

PROFESSOR DEAN COMMISSIONED A MAJOR

Dr. Arthur D. Dean, professor of vocational education in Teachers College, has been commissioned a major in the Sanitary Corps of the United States Army in the department of the Surgeon General. Major Dean's work will be in the Department of Education of the Division of Physical Reconstruction of the Surgeon General's Office. His duties include field direction and supervision of the educational work in the several military hospitals functioning in physical reconstruction. In this supervision he will give special attention to trade, industrial, and technical training.

At present Major Dean is giving his attention to a program for the training of teachers for reconstruction hospitals to carry out which he has been temporarily assigned to Teachers College. It is expected that in November or December a certain number of enlisted men, already skilled in some trade or commercial calling, will be selected from a development battalion and assigned to Teachers College for a six-weeks' course of intensive training in preparation for teaching in reconstruction hospitals.

Major Dean has been professor of vocational education at Teachers College since 1916. Previous to that time he was chief of the Division of Vocational Schools of the New York State Education Department.

PROFESSOR KELLEY MADE DIRECTOR OF S. A. T. C. CLASSIFICATION

Professor Truman Lee Kelley, of the department of secondary education, has been granted a leave of absence to accept an appointment under the Committee on Education of the War Department and will direct the classification and assignment of the men in the Student Army Training Corps. He has already begun his duties with headquarters in Washington. Under Dr. Kelley there will be twelve divisional supervisors and some two hundred and forty officers, one of whom will be stationed at each college at which training is to be provided. During the summer and early fall, Professor Kelley, in addition to his teaching and research in the College, continued his work as psychological assistant to the Personnel Committee of the Surgeon General's Office.

PROFESSOR BAGLEY APPOINTED EDITOR OF NATIONAL SCHOOL SERVICE

Professor W. C. Bagley, editor of *National School Service*, a publication recently organized by the Committee on Public Information for the purpose of stimulating civilian morale, reports the aims of the undertaking in the following statement:

National School Service is published by the Committee on Public Information twice each month during the school year. It is distributed to every public school building in the United States, a sufficient number of copies being sent to supply one to each teacher. Consequently, the circulation reaches 700,000 copies.

The enterprise is one of the most extensive that the Government has so far taken in the interest of civilian morale.

The chief purpose of *National School Service* is to take directly to the teachers official information concerning the causes and progress of the war; the aims of the government in its prosecution; and the needs and programs of the official and semi-official war enterprises that have been working through the public schools—the Liberty Loan and War Savings Committees, the Red Cross, and the United War Work Agencies. It aims to serve as a 'clearing-house' for the school programs of these agencies, to prevent needless duplication of effort, and to safeguard the schools against unnecessary interference with their regular work.

Because of the varied needs of the several grades and types of public schools, five departments were formed: general (including the history and progress of the war); rural schools; primary grades; intermediate grades; upper grades and high schools.

National School Service is under the general direction of Dr. Guy Stanton Ford, chief of the division of education of the Committee on Public Information. Dr. W. C. Bagley, of Teachers College, is editor, and F. W. Searson, of the Kansas State Agricultural College, an alumnus of Teachers College, is managing editor. Miss Mabel Carney and Miss Frances Dunn, both of Teachers College, have joint charge of the rural school department

National School Service is free to teachers in service and one dollar a year to others. Members of the Teachers College staff may have their names placed on the mailing list by writing to Mr. Henry Atwater, business manager, at 461 Eighth Avenue, New York City.

PROFESSOR COLLINS COMMISSIONED A CAPTAIN

Professor E. W. Bagster-Collins, of the department of German of Teachers College, has been given leave of absence by the Trustees for war service. He has been commissioned a captain in the Army and has been assigned to duty in the Intelligence Office in Washington.

In addition to his military duties, Captain Collins is continuing to edit the *Modern Language Journal.* He is the author of *Teaching of German in Secondary Schools* and *A First Book in German.*

EDUCATIONAL ADMINISTRATION

There will be available in a short time the latest survey of a city school system which has been made by the department of educational administration. During the late winter and spring of 1918, the department, under the direction of Professor George D. Strayer, undertook the survey of the school system of Paterson, New Jersey. The survey was conducted as field work in connection with Course 403–404. It was made at the request of Superintendent John R. Wilson and the Board of Education of Paterson. Approximately fifty students of the class took part in the field work and in the final summaries and written reports. The survey is divided into four parts as follows: the financial problems involved in the school systems of Paterson; the school building plant and its measurement; the measurement of the achievements of pupils; and the quality of instruction.

The members of the department of educational administration who assisted Dr. Strayer in this survey were Dr. N. L. Engelhardt, Mr. F. W. Hart, and Mr. E. S. Evenden, while members of the class summarized the work on various sections of the report as follows: Mr. Ira T. Bright, handwriting; Mr. E. E.

Lewis, English composition; Miss Katharine B. Hayes, arithmetic; Miss Annie B. Moore, reading; Mr. William B. Carothers, language completion tests; and Miss Margaret Noonan, quality of instruction. Messrs. Engelhardt, Hart, and Evenden were respectively responsible for the final form of the summaries of the financial, building, and measurement of achievement phases of the report. The survey is being issued as part of the annual report of the superintendent of schools of Paterson.

HOUSEHOLD AND INSTITUTION ADMINISTRATION

Among the students enrolled in institution administration this fall are many who are eager to prepare for war service as dietitians in base hospitals connected with cantonments, both in this country and overseas. A number of these students have been teachers of household arts and are now taking special training in administration work at the College to be followed by pupil-dietitian experience in hospitals or camps. Miss Eleanor Wells, a dietitian of several years' experience, has been appointed as assistant in the department of institution administration to supervise this special work of the practice field for dietitians.

There is also great need for cafeteria directors in canteens, hostess houses, and military hospitals, and a large number of students are therefore fitting themselves for this particular phase of food service. The opportunity is unusually large just now for assistants in college commons in connection with the food service of the Student Army Training Corps.

Miss Florence La Ganke, who has been in charge of the cafeteria at Western Reserve University, Cleveland, Ohio, is now a member of the staff in the administration department, and will assist in the supervision of students training for cafeteria management in their practice field work, which is at present, not only in Horace Mann cafeteria and Whittier Hall, but also in Columbia Commons. Miss Sara Rowe, one of our students who has had the direction of the food problems for aviators in Cornell University, has also been appointed as assistant at the Columbia Commons this year. Miss Emma Baker, dietitian at Whittier

Hall, is in charge of the College Commons with Miss Bertha Nettleton as first assistant. Miss Emma Knight is now directing the Horace Mann cafeteria.

Miss Marcia Mead, who has been teaching house planning in the department of household administration, has been released to continue her work in the construction of Y. M. C. A. buildings in Washington and other cities. The course will be given under Mr. Alfred Morton Githens, an architect and interior decorator of this city. Mr. Githens is associated with Professor W. A. Boring, of the School of Architecture, Columbia University.

Miss May Allinson, who has been conducting a course in Teachers College in research work in connection with household arts problems, has been released for the year to continue her work in connection with the War Industries Board in Washington.

A bureau of information on housekeeping facts (other than food) has been started by the department of household administration in the housewifery laboratory, Room 53. It is hoped through posters, bulletins, leaflets, etc., to give information to household arts students, and to housewives, and also to interest students in departments not connected with the technical school.

INDUSTRIAL ARTS EDUCATION

Lieutenant C. A. Bowman was recently promoted to a first lieutenancy and made a judge advocate for court martials at the Training Camp for Engineers, Camp Humphreys, Virginia.

Mrs. Lois Coffey Mossman spent the month of September in the office of the Surgeon General and at the Walter Reed Hospital in Washington, aiding in the development of a school in occupation therapy at the hospital. The course at this hospital is rather more advanced than others preparing reconstruction aides. The length of the course is five weeks and Mrs. Mossman will return to Washington for the fifth week of each course throughout the year.

Professor William Noyes, formerly of the department of industrial arts, has resigned his position at Duluth to engage in reconstruction work for the Federal Board for Vocational Education. Mr. Noyes has headquarters in New York.

RURAL EDUCATION

Dr. Wilson and Misses Carney, Dunn, Spohr, and Hudson attended a meeting of the County Board of Agriculture, of which Mr. Burris Snyder is president, at Flemington, New Jersey, on September 28. This was the first engagement in the coöperative arrangement between Teachers College and the two New Jersey counties, Warren and Hunterdon. County Superintendent Jason S. Hoffman was in active charge of arrangements, and plans were made for a series of community institutes in the county during the week of November 18. These will be called "War-Time County Institutes in Coöperation with Teachers College, Columbia University." Their purpose is to present plans and principles for the permanent development and war-time reconstruction of country life.

The coöperation with Warren County began October 18, at a meeting of the County Board of Agriculture, at which Mr. Shimer, the county superintendent of schools, and Mr. Huston, emergency farm demonstrator, met the representatives of Teachers College. The County Council of Parent-Teacher Associations met the next day, October 19, and on November 14 the Warren County School Board Association will meet with the representatives of Teachers College at Phillipsburg. At each of these meetings representatives of Teachers College will present the main aspects of rural education in social science, supervision of schools, training of rural teachers, home economics, and public health service. Later the work will be divided and Dr. Wilson will attend all meetings having to do with agriculture or community organizations; Miss Dunn will attend meetings of teachers; Miss Spohr, those meetings which concern the women and girls of the country; Miss Hudson, gatherings having to do with public health and nursing; and Miss Carney, the high school conferences.

Miss Fannie W. Dunn, rural education supervisor for Teachers College, is making frequent visits of reconnaissance in the two New Jersey counties during the fall months and attending a number of local and county meetings.

Dr. Wilson and Miss Carney are members of the National Country Life Committee of which President Kenyon L. Butter-

field, of the Massachusetts Agricultural College, is chairman. This committee will hold a Country Life Conference in Baltimore on November 11 and 12, at which the social or non-economic phases of rural life will be considered. Miss Carney is chairman of the Sub-committee on Rural Schools, and Dr. Wilson is chairman of the Committee on Moral and Religious Education and of the Sub-committee on Moral and Religious Education.

A Country Life Conference was held August 2 and 3 during the summer session with the following speakers participating: Professor Franklin H. Giddings, Mr. E. C. Higbie, of the Re-Education Camp at Trenton, New Jersey; Dean A. R. Mann, of Cornell College of Agriculture; and Dr. H. W. Foght, of the Bureau of Education. A very satisfactory attendance showed that there is a real place for this conference in the year's work.

During the summer Dr. Wilson taught in periods of five days each in MacDonald College, Quebec, Canada, and in the institute of Trumbull County, Ohio, at Warren.

Miss Carney spent the interval between spring and summer sessions on a western trip speaking fifty-four times on rural school conditions and needs in war time. Engagements were filled at normal schools, rural conferences, and state educational associations, in West Virginia, Tennessee, Illinois, Minnesota, Michigan, Idaho, and Washington.

SECONDARY EDUCATION

A conference of representative schoolmen was called by Commissioner P. P. Claxton in May, to make recommendations on the teaching of science and industrial arts in secondary schools during the war emergency. Professor Caldwell, Professor Briggs, and Dr. G. R. Teviss were members of the science committee, and Dr. W. T. Bawden was chairman of the industrial arts committee. The reports were published in the first issue of the United States Bureau of Education magazine *School Life*, and this was distributed to all the schools in the country. Dr. Claxton believes the report will materially influence the teaching of science and industrial arts not only during the war but afterwards as well.

Dr. Julius Sachs, emeritus professor of secondary education, has been of active service during the spring to the Intelligence Department of the United States, work for which his intimate acquaintance with the people and language of several countries eminently fits him. During the Winter Session Professor Sachs is giving a course on War Issues for the Student Army Training Corps at Columbia.

Owing to illness, Professor Romiett Stevens was obliged to give up her work in the Summer Session, and consequently one of her courses was omitted and the other was given by Dr. Fretwell. After three months in Maine, Professor Stevens has returned much improved in health. During the second semester she will take her sabbatical leave.

During the spring Professor Stevens and other members of the welfare committee were engaged in investigating the munition plants and farm sections that sent to the College calls for young women workers. As a result a number of students, both men and women, were placed in various munition and gas-mask plants for patriotic service, and several units were formed for work on New York and New Jersey farms.

In June Professor Briggs spoke before the teachers of Kansas City and St. Louis and at the University of Kansas. In October at Lincoln and Omaha, Nebraska, and at Atchison, Kansas, he addressed the teachers and representative business men. At all of these places his subjects concerned education as affected by the war and the necessity of adjustments to meet the national demands.

Professor Briggs has been coöperating with the Foreign Press Bureau of the Committee on Public Information by preparing a series of articles on secondary education for publication in foreign magazines and newspapers. During the summer, he also wrote the chapter on secondary education for Commissioner Claxton's biennial report.

A report of the survey of the Hebrew Sheltering Guardian Society Orphanage at Pleasantville, New York, has been prepared by Professor Briggs and presented to the Trustees. The survey was made by students of Professors McMurry, Snedden, Briggs, Stevens, Kelley, Dr. McCall, and Dr. Hollingworth.

THE RURAL CLUB

The Rural Club of Teachers College has organized for the year on a project basis. Under this plan of organization the club will be closely identified with the activities of the rural department in the College, and also with the practical consideration of field problems in rural education throughout the country. Other advantages of such an organization, it is believed, will be the increased motivation of all club activities and the better enlistment and coöperation of all members in working on the projects undertaken.

After a careful listing of possible projects the club has decided to work upon four during the year. The first of these is the writing of a country life festival to be given at Teachers College and perhaps at the county conferences next February in Hunterdon and Warren Counties in New Jersey. It is hoped, also, that this festival may be worthy of publication so that it can be made available to rural communities throughout the country.

The second is a study of the education bill recommended by the National Emergency Commission of the National Education Association, especially in its rural phases, and the giving of assistance as far as possible in the passage of this bill. The third project consists in arranging for another Rural Progress lecture similar to that given last year by Dr. George E. Vincent. For this a country life leader of national reputation will be secured, and the purpose will be to direct the attention of the whole college to the significance of rural welfare. The fourth effort of the club for the year will be the preparation of a directory of rural life leaders. To this each member will contribute. The first two projects named are to be undertaken during the first semester, and the latter two, during the second term.

The executive committee of the club, which is charged with the general direction of club activities under a revised constitution adopted at a recent business meeting, consists of Miss Eula J. Miller, president; James W. Grant, vice-president; Mrs. Hetty S. Browne, secretary-treasurer; and Miss Annie Grace and W. S. Pittman. New officers are to be elected each semester so as to afford executive experience to a larger number of students. Meetings have been arranged for every third week of the year. A rural picnic supper and a program on field reports have already been held during October.

ALUMNI ACTIVITIES

NEW ALUMNI TRUSTEE TO BE NOMINATED

At a meeting of the Trustees of Teachers College which is to be held February 13, an Alumni Trustee is to be elected to succeed Miss Valentine L. Chandor, whose term expires the first of next March.

It will be recalled that in February, 1914, the Trustees of Teachers College announced their intention to elect each year an Alumni Trustee to serve for a period of two years. As a result of this plan Alumni Trustees have held or are now holding office as follows:

Dr. David Snedden	March 1914 to March 1916
Miss Lida Lee Tall	March 1915 to March 1917
Dr. Lotus D. Coffman	March 1916 to March 1918
Miss Valentine L. Chandor	March 1917 to March 1919
Dr. Milo B. Hillegas	March 1918 to March 1920

The only vacancy to be filled this year is that of Miss Chandor.

Each year the Alumni Association coöperates with the Trustees by nominating such Alumni Trustees, *these nominations to be made on a blank form provided on the last page of this number of the* RECORD (following the advertising section). This form must be filled and returned so as to reach New York not later than January 1, 1919. Every alumnus should take advantage of the opportunity thus afforded to be represented through the Alumni Trustee in the administration of the College. *Send in your nominations early.*

Only those members of the Alumni Association whose dues are paid for the current year are eligible to make nominations. In order to avoid any misunderstanding as to the qualifications of an Alumni Trustee, the Executive Committee of the Alumni Association proposed at the meeting of the Alumni Council held last February the following amendment to the constitution

to be voted upon at the meeting next February: "To be eligible for nomination as Alumni Trustee one must hold either a professional diploma or a degree from Teachers College and must not be in the pay of the College or of any other part of Columbia University."

The method of nomination of Alumni Trustees by the members of the Association is as follows: Names shall be proposed and balloted upon in the same manner as for the election of officers of the Alumni Association (see below). The Executive Committee then canvasses the returns and lays the results before the Trustees of Teachers College at their meeting of February 13. The Trustee thus elected is announced at the Alumni Conferences on Saturday, February 22.

NOMINATE NEW OFFICERS FOR THE ALUMNI ASSOCIATION

At the annual meeting of the Alumni Association to be held at Teachers College February 21–22 the following officers of the Association are to be elected: President, corresponding secretary, and treasurer. The elections are to be made for a term of two years beginning March 1, 1919. These offices are held at present by the following persons whose terms expire March 1, 1919: President, Dr. Ernest N. Henderson; treasurer, Dr. William A. Maddox; corresponding secretary, Miss Stella S. Center.

The other members of the Alumni Association whose terms do not expire until March 1, 1920, are as follows: First vice-president, Miss Roxana A. Steele; second vice-president, Mr. William E. Stark; recording secretary, Miss Anna Jean Gannett.

Nominations for the above offices, vacant in March, may be made by any chartered Teachers College club or by any ten members of the Association not already holding membership in a chartered Teachers College club but acting conjointly. Nominations must be received in New York by January 1 *on the blank form provided on the last page of this number of the* RECORD (after the advertising section). All members of the Association are expected to use the blank form thus provided in the RECORD as no other form for nominations is to be sent out. Only members of the Alumni Association whose dues are paid for the current year are eligible to nominate officers or to vote.

After the nominations are received a list of the nominees will be sent out early in January, together with a blank ballot, to each active member of the Association, who shall then fill out and return the ballot by February 5. The returns will then be canvassed by the executive committee, which shall lay the results before the Alumni Council at the annual meeting on February 22. *Fill in the form on the last page and send it in immediately.*

FEBRUARY ALUMNI CONFERENCES

The Annual Alumni Conferences will be held at the College Friday and Saturday, February 21 and 22, at which time a most attractive offering is promised. The various section programs are now being prepared and will appear in the January RECORD. In addition to the usual exercises there will be the annual Teachers College Festival.

DR. COFFMAN TO DIRECT RECONSTRUCTION WORK

Dr. Lotus D. Coffman, dean of the School of Education of the University of Minnesota, succeeds Dean Russell, beginning October 1, as director of the Department of Education of the Division of Physical Reconstruction of the Surgeon General's Office at Washington.

Dr. Coffman is well known among the alumni of Teachers College, having served as Alumni Trustee from 1916 to 1918.

Dr. Coffman graduated at the Indiana State University in 1906 with the degree of Bachelor of Arts and in 1910 with the degree of Master of Arts. He received the degree of Doctor of Philosophy from Teachers College in 1911. From 1912 to 1915 he was professor of education in the University of Illinois and since 1915 has been dean of the College of Education of the University of Minnesota. He is author of a number of well-known books and is a frequent contributor to educational journals.

DR. WILLIAM F. RUSSELL IN RUSSIA

Dr. William F. Russell, dean of the College of Education of the State University of Iowa, has gone to Russia as the educational expert with Arthur Bullard, director of the Russian-Siberian Division of the Committee on Public Information.

Dr. Russell left the United States for Siberia last summer and, according to cable reports from Mr. Bullard, has started effective educational work in many of the Siberian cities and communities. As the committee's string of offices for the distribution of cable and mail news now extends from Vladivostok to Omsk, he has a wide territory for endeavor. His activities are as varied as addressing teacher groups and advising town dumas how to draft a city charter on an American model adapted to Siberian needs and limitations. Dr. Russell will return home in the winter to present the Russian educational problem to America.

Dr. Russell is the son of Dean Russell of Teachers College. He graduated at Cornell University in 1910 with the degree of Bachelor of Arts and at Teachers College in 1914 with the degree of Doctor of Philosophy. From 1910 to 1912 he taught history and economics in the State Teachers College of Colorado. From 1913 to 1914 he was honorary fellow and assistant in philosophy of education at Teachers College. In 1914 he was appointed associate professor of secondary education, and later professor of secondary education, at George Peabody College for Teachers at Nashville, Tennessee, resigning in 1917 to become dean of the College of Education of the State University of Iowa.

DR. MEAD ACCEPTS PROFESSORSHIP AT CALIFORNIA

Dr. Cyrus D. Mead, professor of elementary education for the past seven years at the College for Teachers, University of Cincinnati, has been appointed professor of elementary education at the University of California.

Dr. Mead graduated at Teachers College in 1912 with the degree of Master of Arts and in 1915 with the degree of Doctor of Philosophy. He received the degree of Bachelor of Philosophy in 1898 at DePauw University. From 1904 to 1910 Dr. Mead was principal of the Indiana School for Feeble-minded Youth at Fort Wayne. Previous to that time he had been engaged in other institutions respectively as an elementary principal and as a high school principal.

Dr. Mead is well known in educational circles and is a frequent contributor to educational periodicals.

MR. AIKIN APPOINTED PRINCIPAL OF SCARBOROUGH SCHOOL

Mr. W. M. Aikin, graduate student at Teachers College in 1917–1918 and the summer session of 1918, has been made principal of the Vanderlip School at Scarborough, New York. As principal of the school, Mr. Aikin succeeds Dr. Ernest Horn, Ph.D., 1914, who has supervised the school during the past two years in connection with his work as professor of education at the University of Iowa.

Mr. Aikin graduated at Muskingum College with the degree of Bachelor of Science in 1907 and at the University of Michigan with the degree of Master of Arts in 1913. From 1907 to 1909 Mr. Aikin taught English and history at the high school at Bowling Green, Ohio, and from 1909 to 1911 taught the same subjects in the high school at Jackson, Michigan. From 1911 to 1916 he was principal of the high school at Ann Arbor, one of the most prominent secondary schools in Michigan. From 1916 to 1917 he was instructor in school administration in Ohio State University.

It is Mr. Aikin's aim to continue the work started by Dr. Horn in making the Scarborough School a thoroughly modern institution, applying the newer philosophy of education and carefully measuring the results.

FRED ENGELHARDT PROMOTED TO MAJORSHIP

Fred E. Engelhardt, A.M. Teachers College, 1916, commissioned as a captain in one of the first Officers Training Schools, has recently, upon request of the War Department, written a text-book on gunnery. In recognition of this contribution and of his work as an instructor in the School for Heavy Artillery at Fortress Monroe, he has been promoted to the rank of major and assigned to the above school as supervisor of instruction.

Major Engelhardt is a brother of Professor N. L. Engelhardt, of the department of educational administration, Teachers College.

JOHN MARQUARD ON THE ROLL OF HONOR

Word has been received of the death of John Murray Marquard, graduate student at Teachers College, 1914–1915. John Marquard obtained his B.A. at Grey University, Bloemfontein, South Africa, in 1907 and was afterwards a master in the Government School at Kromstad, South Africa. He went to England in the summer of 1915 to enter the Officers Training Corps and was commissioned First Lieutenant, 13th Royal Fusiliers of the British Expeditionary Force. At first he served as Transportation Officer but was later transferred to the line. Recently he was badly wounded, but recovered and returned to the front. After only one week there he was killed in action during the week ending September 20. Information from South Africa verifies the report of his death in the London *Times*.

The news of the death of Lieutenant Marquard causes keen sorrow not only to the British alumni but to the many Americans who knew him and who counted him their friend. He was quiet and modest and clean; altogether the kind of man one instinctively respects and has faith in. The thought that he is gone is a little less painful when we realize not only that he died that others might live, but that his death has brought us all a little closer in sympathy and purpose with the far-off Africa which he called his home.

MISS STEELE APPOINTED SUPERVISOR AT VANDERLIP SCHOOL

Miss Roxana A. Steele, for the past five years a teacher in the Horace Mann Elementary School, has been appointed supervisor of the elementary grades at the Vanderlip School at Scarborough, N. Y.

Miss Steele graduated at the Maryland State Normal School in 1904 and at Teachers College with the degree of Bachelor of Science in 1912. From 1908 to 1911 she was a teacher in the third grade in the Speyer School at Teachers College. Miss Steele has been active in promoting the interests of the Teachers College Alumni Association and is now the first vice-president of that organization.

MISS TALL GOES TO THE LINCOLN SCHOOL

Miss Lida Lee Tall, for two years alumni trustee of Teachers College, has been appointed supervising principal of the first six grades at The Lincoln School.

Miss Tall graduated at Teachers College in 1914 with the degree of Bachelor of Science. From 1904 to 1908 she was instructor in the Teachers Training School of Baltimore, and from 1908 up to the time of her appointment at The Lincoln School was supervisor of grammar grades of Baltimore County, Maryland. During the summer of 1912 Miss Tall taught in Johns Hopkins University and during the summer of 1916 at Teachers College. From 1906 to 1911 she was associate editor of the *Atlantic Educational Journal.*

Miss Tall is well known through her work in supervision and her writings in history for the elementary schools.

ALUMNI DEVISE TRADE TESTS FOR WAR DEPARTMENT

During the summer and fall a number of Teachers College alumni have been engaged in one of the newest of the many interesting applications of psychological methods and statistics to the problems of the National Army. At Newark, New Jersey, an extensive testing station has been established under the jurisdiction of the General Staff for the purpose of devising and standardizing a great number of trade tests by which to determine the efficiency of enlisted men in the Army. This Trade Test Division is under the direction of the Committee on Classification of Personnel in the Army, of which Professor E. L. Thorndike is chairman and with which Professor Truman L. Kelley has been associated.

Among those who have been members of the staff of the testing station as statisticians or examiners are the following: Miss Harriet O'Shea; Professor Paul Kruse, now of Cornell University, Teachers College, Ph.D. 1917; Dr. Cliff W. Stone, Ph.D. 1908; Dr. Percy Hughes, Ph.D. 1904; Mr. Robert M. Reinhold; and Mr. Andrew T. Wylie, formerly assistant in English, Teachers College. Dr. Thomas Kirby, Ph.D. 1913, has also been engaged in similar work for the War Department in Pittsburgh.

PRESIDENT CRANE COMMISSIONED MAJOR

Arthur G. Crane, president of the State Normal School at Minot, N. D., has been commissioned a major in the Sanitary Corps of the United States Army. The board of trustees of the Normal School have granted him leave of absence for this army service. President Crane will devote his attention to the reconstruction division of the Surgeon General's Office where he will act as one of the supervisors in the United States general hospitals functioning in reconstruction. At present he is assigned to special duty in New York where he is a member of a committee on courses of instruction for disabled soldiers made up jointly of representatives of the Surgeon General's Office and of the Federal Board for Vocational Education.

President Crane was granted the degree of Master of Arts by Teachers College in 1918. He is also matriculated as a candidate for the degree of Doctor of Philosophy in Teachers College. He received the degree of Bachelor of Science from Carleton College in 1902. He has been principal and superintendent of schools in Montana and at Jamestown, N. D. For the past six years he has been president of the State Normal School at Minot, N. D. President Crane has been in charge of this normal school since it was established and had charge of the building plans and construction as well as the organization of the school. He has served as president of the North Dakota State Teachers College and is a member of the State Board of Education ofNorth Dakota.

DR. JESSE F. WILLIAMS COMMISSIONED LIEUTENANT

Dr. Jesse F. Williams, professor of hygiene and physical education at the University of Cincinnati, has been commissioned a lieutenant in the Medical Corps in the United States Army where he will give his attention to the work of reconstruction. He is now in charge of the department of recreation, physical training, and physical therapy at the Walter Reed Hospital in Washington.

Lieutenant Williams was instructor and assistant professor of physical education at Teachers College from 1911 to 1916.

He also had charge of the work in physical education in the Teachers College Summer Sessions of 1917 and 1918. He graduated at Oberlin College in 1909 with the degree of Bachelor of Arts and at the College of Physicians and Surgeons of Columbia University with the degree of Doctor of Medicine in 1915. He is co-author with Dr. Wood, of Teachers College, of *Healthful Schools*.

MISS CHACE APPOINTED DIRECTOR OF HOME ECONOMICS

Miss Edith Pitt Chace, recently a member of the staff of the household arts department of Teachers College, has been appointed director of home economics at Pennsylvania State College, State College, Pa. Miss Chace graduated at Teachers College in 1915 with the degree of Bachelor of Science and in 1918 with the degree of Master of Arts.

Three other Teachers College alumnae have also taken positions in the home economics department at the Pennsylvania State College. They are Miss Louise Moss, B.S. 1914; Miss Katherine Kumler, 1917–1918; and Miss Marjorie Sime, B.S. 1918.

RECENT APPOINTMENTS

Professor Robert J. Leonard, A.M. 1914, has been elected to the professorship of vocational education in the University of California where he began the year's work in September. For the past year Professor Leonard has served as agent for the Federal Board for Vocational Education in the Mississippi Valley states.

Mr. Harry Bruce Wilson, A.M. 1910, has been appointed superintendent of schools at Berkeley, California. It is understood that Mr. Wilson will also give a course on elementary education at the University of California.

Mr. F. J. Sickles, who received his A.M. degree this October, has been elected superintendent of schools at Millville, New Jersey.

Mr. F. Theodore Struck, A.M. 1914, and now a candidate for the Doctor's degree, who has been an instructor in the Essex

County, New Jersey, Vocational School, has received appointment as professor of agricultural education in the Pennsylvania State College.

Mr. Nelson Croxford Smith, of Santa Maria, California, a student at Teachers College during the past summer, is principal of the new junior high school at New Brunswick, New Jersey.

Mr. Herman Hjorth, B.S. 1917, resigned his position as efficiency engineer with a steel company in Bayonne, New Jersey, in August to accept the appointment as director of the Porto Rican Technical School at San Juan.

Mr. George L. Bennett, A.M. 1913, for some years principal of the high school at Hackensack, is now principal of the high school at Yonkers, New York.

Miss Alice Boughton, Ph.D. 1917, is now connected with the statistical department of the War Industries Board in Washington.

Miss Mabel G. Reed, who has been director of housekeeping in the University Hospital of the University of Cincinnati for the past three years, has gone as dietitian with the Base Hospital Unit 25 for work overseas. Miss Reed was a student at Teachers College during the years 1912–1915.

Mr. Philip W. L. Cox, principal of the Ben Blewett Junior High School at St. Louis, has obtained leave to work for the Federal Board for Vocational Education.

Mr. Aaron James Stout, who has been studying secondary education during the past five summers at Teachers College, has been made superintendent of schools at Topeka, Kansas.

Mr. Clarence Nevel Smith, A.M. 1918, has been elected principal of the high school at West Chester, Pennsylvania, succeeding Mr. Arthur T. French, who becomes professor of mathematics in the Winona, Minnesota, State Normal School.

Miss Mabel Little, a student at Teachers College from 1910 to 1912, who is head of dining halls at Cornell University, was granted a year's leave of absence to supervise the establishment of cafeterias in connection with munition factories in France and has lately received a second year's extension of leave to continue her work there.

SUMMER SESSION MEN'S DINNER

We're the men of Teachers College,
But we're shutting up our school
With its pedagogied knowledge
Measured by the sliding-rule.

'Unconditional Surrender'
Were the only terms allowed,
So the faculty, so tender-
Hearted, struck and joined the crowd.

We have got our oldest duds on
And, with cloister calloused feet,
We are hiking up the Hudson,
After things to hear and eat!

And we sure got both! Culinary-Captain Hart had reconnoitered for days in advance, and had chosen the best spot on the Jersey bank for the 1918 Summer Session annual dinner for the men of Teachers College. This was a brave innovation for it was the first Men's Dinner to be held out-of-doors; and no one without a Wild West instinct for self-preservation would have dared to start across the Hudson with a wagon-load of eats. But Hart got there, and with window-guards which he had torn from a county jail when the Southwest went dry, he had erected a grid, and had a sizzling fire ready when the voracious gregarians arrived.

A formidable hunk of barbecued steak, camouflaged with scorched onions, 'hot dogs', bacon, buns, pickles, sandwiches, and fruit were the menu of even the most timid. The happy gormands then resorted to the natural amphitheatre and to cigars and Missouri cobs, while Scout Master Fretwell aroused a round of hearty singing. Then the lanterns were hung out, and the contented men who have the future of education at heart listened profitably as Chairman Shanklin presented the speakers. Professors Monroe, Briggs, and Bagley, H. W. Carothers and Superintendent McClintock discussed significant phases of the current situation. Then in the stillness of the late evening Dean Russell related to his colleagues and their students the difficulties and disappointments and the final success of the

plan for rehabilitating wounded soldiers. He unfolded the plan for repairing the morale of discouraged boys, and for fitting them for future productive citizenship.

Every man who was there will cherish the memory of a happy evening and will attest to the success of an out-door dinner.

NOTICE TO READERS

The Bureau of Publications wishes to purchase the following back numbers of the TEACHERS COLLEGE RECORD, which are now out of print:

Vol. 16, No. 5	November,	1915
Vol. 18, No. 1	January,	1917
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Bureau of Publications

Teachers College, Columbia University

New York City

FOR DIRECTIONS FOR FILLING IN THIS FORM, SEE PAGES 499-501

To the Executive Committee of the Alumni Association of Teachers College, Columbia University:

WE the undersigned active members of the Alumni Association hereby nominate the following persons to be voted upon in the coming election:

For President.....

For Treasurer.....

For Corresponding Secretary.....

For Alumni Trustee.....

In our judgment the persons named above are fitting candidates for the offices designated.

TO BE SIGNED BELOW BY TEN MEMBERS OF THE ASSOCIATION

1.	.....	6.	.....
2.	.....	7.	.....
3.	.....	8.	.....
4.	.....	9.	.....
5.	.....	10.	.....

Date.....

This blank properly filled out must reach the Corresponding Secretary, Stella Center, Teachers College, 525 West 120th Street, New York City, **not later than January 1, 1919.**

NOTES: 1. Nominations for the above offices may be made by any chartered Teachers College club or by any 10 members of the Association not holding membership in a chartered Teachers College club but acting conjointly.

2. For the qualifications of an Alumni Trustee see p. 499 of this number of the RECORD.

3. Lists of nominees will be sent out early in January, together with a blank ballot, to each active member of the Association.

4. The above does not constitute the casting of a vote or ballot but is solely a nomination.

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The *Teachers College Record*, as it has been issued since January, 1915, has enlarged and supplemented the old *Record* without detracting from the special monograph feature upon which the value of the *Record* has so long depended. These longer articles will still continue to occupy the greater portion of the magazine, but, in addition, there will appear in each issue shorter items concerning all departments and organizations of the College, news of the alumni and their work and reports from the Teachers College clubs now being organized in a number of cities. In order that the departments of household arts may be adequately represented, the *Household Arts Review* has ceased publication in separate form, and since January, 1915, has been incorporated with the *Record*.

Dean Russell is the editor of the new *Teachers College Record;* Secretary Upton is associate editor; the contributors include the Teachers College faculty and prominent alumni.

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